

Building 637 Area Completion Report

**Presidio of San Francisco,
California**

31 March 2004

Prepared for:

**The Presidio Trust
San Francisco, California**

Prepared by:

**Erler & Kalinowski, Inc.
Burlingame, California**

EKI A000003.10





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Subject: Building 637 Area Completion Report, Presidio of San Francisco,
California
(EKI A000003.10)

Dear Ms. Yata:

Erler & Kalinowski, Inc. ("EKI") is pleased to present to the Presidio Trust ("Trust") the attached report, entitled *Building 637 Area Completion Report* and dated 31 March 2004 ("Completion Report"), which was prepared in accordance with our contract PT-2000-001 and purchase order number 4235.

The Completion Report was also prepared in accordance with Task 12 of Regional Water Quality Control Board, San Francisco Bay Region Order R2-2003-080 and Section 5.16 of the Trust's Consent Agreement with the Department of Toxic Substances Control, dated 30 August 1999.

If you have any questions about the attached report, please do not hesitate to call us.

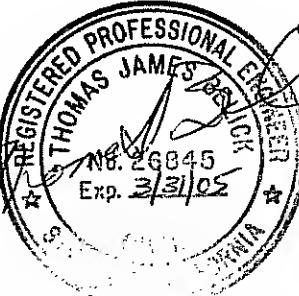
Very truly yours,

ERLER & KALINOWSKI, INC.

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BUILDING 637 AREA COMPLETION REPORT

Presidio of San Francisco, California

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BUILDING 637 AREA COMPLETION REPORT

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1. INTRODUCTION

1.1 PURPOSE OF REPORT

This Building 637 Area Completion Report (“Completion Report”), prepared by Erler & Kalinowski Inc. (“EKI”) on behalf of the Presidio Trust (“Trust”), is intended to meet the requirements of Task 12 of San Francisco Bay Regional Water Quality Control Board (“RWQCB”) Order No. R2-2003-0080 for the Building 637 Area and Section 5.16 of the Consent Agreement with the Department of Toxic Substances Control (“DTSC,” 1999). As shown on Figure 1, the Building 637 Area is located south of Crissy Field along the northern boundary of the Presidio of San Francisco.

Task 12 of Order No. R2-2003-0080 (the “Order”)¹ calls for submittal of a technical report that requests closure certification for underground storage tanks (“USTs”), aboveground storage tanks (“ASTs”), and fuel delivery system (“FDS”) pipelines following completion of removal and remedial actions. Based on the remedial activities conducted at the Building 637 Area and as documented by soil and groundwater sampling results, the Trust concludes that cleanup levels and remedial goals have been met such that no further corrective actions or soil or groundwater monitoring are needed, and that the Building 637 Area meets unrestricted use, including residential.

Section 5.16 of the DTSC Consent Agreement requires the Trust to submit an Implementation Report that documents the completion of remedial activities performed under the oversight of the DTSC. The Corrective Action Plan (“CAP”) and the associated work plan for the Building 637 Area (Trust, 1999a; 1999b) were also approved by the DTSC (DTSC, 1999b) because of the low levels of non-petroleum constituents associated with tank 640.2 and halogenated volatile organic chemicals (“VOCs”) in groundwater north of Building 643. This Completion Report is intended to provide the necessary documentation to obtain closure certification for these sites from the DTSC.

In view of this completion of remedial actions and the submittal of associated documentation, the Trust asks that the requirements for a Five-Year Status Report, described in Task 13 of the Order, be waived for the Building 637 Area.

1.2 GENERAL DESCRIPTION OF THE PRESIDIO

The Presidio of San Francisco (“Presidio”) is located at the northern tip of the San Francisco Peninsula. The Presidio, occupying 1,491 acres, is bounded by San Francisco Bay on the north and the Pacific Ocean on the west. The remaining boundaries are with the City of San Francisco.

¹ California Regional Water Quality Control Board, San Francisco Bay Region, Order No. R2-2003-0080, Revised Site Cleanup Requirements and Rescission of Order No. 91-082 and Order No. 96-070 for the Property Located at The Presidio of San Francisco, City and County of San Francisco.

The Department of the Defense, Department of the Army (“Army”) operated the Presidio as a military post from 1848 to 1994. It served as a coastal defense fortification and a mobilization and embarkation point.

The Presidio lies within the Golden Gate National Recreation Area (“GGNRA”), created by Congress in 1972. The GGNRA legislation specified that, if the military could no longer use the Presidio, jurisdiction would be transferred to the Department of the Interior, National Park Service (“NPS”). In 1972, the Army transferred Baker Beach, part of Crissy field, and the Fort Point National Historic Site to the NPS. In 1989, the Army announced that the Presidio would close as part of the Base Realignment and Closure Act (“BRAC”). The Army transferred the remaining portion of the Presidio to the NPS in 1994.

In 1996, Congress enacted the Presidio Trust Act (Section 103 of the Omnibus Parks and Public Lands Management Act of 1996, Public Law 104-333, 110 Stat. 4097) creating the Presidio Trust and giving the Trust jurisdiction over the 1,168-acre inland area of the Presidio known as Area B. The NPS continues to manage the shoreline area known as Area A.

In 1990, in anticipation of the transfer by the Army, the NPS began planning the conversion of the Presidio from a military post to a national park. The planning effort culminated in the *General Management Plan Amendment* (“GMPA”) prepared by the NPS (NPS, 1994). The GMPA guides the overall management and improvement of the Presidio, and is the governing plan for Area A. The Trust prepared the *Presidio Trust Management Plan* (“PTMP”) (Presidio Trust, 2002) setting forth the Trust’s land use policies and general management framework for Area B.

With certain exceptions, the Trust has assumed responsibility for environmental remediation of the Presidio. For the Building 637 Area, corrective actions were undertaken both by the Army and by the Trust. As part of the Trust’s environmental remediation responsibility, the Trust retained EKI to prepare this Completion Report.

2. BACKGROUND OF BUILDING 637 AREA

2.1 BUILDING 637 AREA BACKGROUND

The Building 637 Area is located along the northern perimeter of the Presidio, south of Crissy Field. The Building 637 Area was previously a petroleum, oil, and lubricants (“POL”) area used as a refueling station for the adjacent Consolidated Motor Pool facility. The Building 637 Area also included a hazardous materials storage area at Building 638. Subsurface releases from the underground piping between ASTs and fuel dispensing islands, and surface spills associated with POL activities, were believed to be the primary sources of petroleum-related contamination (Montgomery Watson, 1999a).

The Army deactivated the Motor Pool facility following the 1989 Loma Prieta earthquake. In 1993, the POL was closed by the Army, and the ASTs, vapor control tank, underground piping, fuel islands, and pump control house were removed.

During the 1990s, the Army conducted several site investigations and characterizations and removed certain facility components and contaminated soil. The Army also characterized and treated groundwater. The Army prepared a draft CAP in 1997 and a revised draft CAP in 1999 (Montgomery Watson, 1999). After the Trust assumed responsibility for the remediation of the Presidio in May 1999, the Trust prepared the final CAP for the Building 637 Area (Presidio Trust, 1999a).

The CAP was prepared to fulfill the requirements of: (1) Title 23, California Code of Regulations (“CCR”), Division 3, Chapter 16, Article 11; (2) California Health and Safety Code (“H&SC”), Chapters 6.5 and 6.8; and (3) 42 United States Code (“USC”) § 9601 et seq. In addition, the CAP document was prepared to meet DTSC requirements for a Remedial Action Plan (“RAP”) as well as the substantive technical requirements for remedial alternative evaluation in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (“NCP”) (40 Code of Federal Regulations [“CFR”] Part 300).

The Trust prepared a *Corrective Action Plan, Building 637 Area, Work Plan*, dated August 1999 (“Work Plan;” Trust, 1999b) to guide the implementation of the CAP. As described in the Trust’s *Excavation Report for the Building 637 Area at the Presidio of San Francisco*, dated 22 June 2000 (“Excavation Report;” Trust, 2000), the Trust completed the following corrective activities at the Building 637 Area in 1999 and early 2000:

- Removed remaining contaminated vadose zone soil and performed verification soil sampling and analysis;
- Treated residual hydrocarbons in the smear zone; and

- Established a monitoring well network to demonstrate that contaminated groundwater is not migrating to the restored Crissy Field wetland area.

As discussed in the Work Plan and Excavation Report, residual petroleum hydrocarbons in the smear zone were addressed by: (1) applying proprietary Oxygen Release Compound® (“ORC®”) during backfilling at several excavations to enhance in situ aerobic bioremediation, and (2) injecting ORC® into the smear zone at the top of the water table.

Groundwater monitoring of the new well network proceeded in accordance with the CAP. Monitoring commenced in June 2000 for certain wells and in May 2001 for other wells. The Army and Trust excavation areas are shown on Figure 2. The ORC® treatment area and the groundwater monitoring well network are shown on Figure 3.

Section 3 summarizes the implementation of the CAP requirements.

2.2 SITES AND AREAS INCLUDED IN THE FINAL CAP

The extent and nature of the several contamination sources and investigations in the Building 637 Area are described in a number of past Army-prepared documents. The approach of the CAP was to bring together all available information from earlier reports and investigations and, in a coordinated effort, to address all of the known contamination-related issues that remained at and near the site of former Building 637. The general area included in the CAP is shown on Figure 3.

The Building 637 Area extends from the base of the bluffs on the south to the northern edge of groundwater contamination, and from the east side of Buildings 634 and 638 to the western portion of Building 643. The sites listed in Table 1 are all near Building 637. These sites represent a comprehensive cleanup of remaining identified environmental issues over the entire Building 637 Area. The known contamination sites in the Building 637 Area, provided in Table 1, include petroleum-related sites, a former waste oil UST with an associated oil-water separator (“oil-water separator/UST 640.2”), and a small area north of Building 643 that is impacted with halogenated VOCs in groundwater.

3. SATISFACTION OF CORRECTIVE ACTION PLAN REQUIREMENTS

This section summarizes the implementation of the CAP requirements, and the data that demonstrate the Trust has met the requirements of the CAP and that no further action is required in the Building 637 Area.

3.1 SUMMARY OF CORRECTIVE ACTION PLAN REQUIREMENTS

The remedial alternative for the Building 637 Area selected by the CAP consisted of the following main components:

- Excavation and off-site disposal or treatment of soil within the unsaturated zone (i.e., ground surface to 4 feet below ground surface (“bgs”)) that contained petroleum hydrocarbons greater than applicable soil cleanup levels, in order to accomplish shallow soil source removal;
- Enhanced in-situ bioremediation, using ORC®, of soil within the smear zone above the water table that contained petroleum hydrocarbons, in order to accomplish further source removal; and
- Implementation of a groundwater monitoring program: (1) to monitor groundwater flow directions in the A1 and A2 water-bearing zones, (2) to confirm that groundwater containing petroleum hydrocarbons above the saltwater protection zone cleanup levels is not migrating into the Crissy Field wetlands after the Crissy Field restoration, (3) to evaluate the effects of enhanced in-situ bioremediation, (4) to confirm that petroleum hydrocarbon concentrations in the Building 637 Area continue to be stable or decreasing, and (5) to confirm that vinyl chloride concentrations in the A2 Zone have declined below the promulgated Maximum Contaminant Levels (“MCLs”).

3.2 APPLICABLE CLEANUP LEVELS

Both petroleum and non-petroleum compounds have been detected in soil and groundwater in the Building 637 Area. Cleanup levels were adopted in the CAP for each chemical of concern. Cleanup levels for petroleum hydrocarbons and petroleum hydrocarbon-related compounds are listed in Table 2A. Cleanup levels for non-petroleum compounds are listed in Table 2B.

The basis of these cleanup levels is described in the CAP and summarized in the notes to Tables 2A and 2B. The soil cleanup levels are the most stringent of the recreational, terrestrial, and water quality-based cleanup levels. The groundwater cleanup levels for petroleum hydrocarbons and related constituents within the Building 637 Area are for

protection of water quality in the Crissy Field groundwater area and for protection of saltwater aquatic life for sampling locations that are less than 150 feet from the wetlands.

As discussed in the CAP, MCLs were identified as the relevant and appropriate cleanup levels for halogenated VOCs in the Building 637 Area.

3.3 IMPLEMENTATION OF CAP REQUIREMENTS

As described in the Excavation Report, remedial activities were conducted in accordance with the CAP and Work Plan approved by the RWQCB in a letter, dated 27 August 1999, and by the DTSC in a letter, dated 1 September 1999. Section 3.3.1 describes the results of the soil corrective actions. Section 3.3.2 describes the results of the groundwater monitoring program. Exceptions to the CAP and Work Plan requirements are discussed in Section 3.3.3.

3.3.1 Soil Corrective Actions

From 8 September through 7 October 1999, soil impacted with petroleum hydrocarbons and related constituents was excavated from six locations at the Building 637 Area. These excavation areas are shown on Figure 2. Soil in one of the six excavated areas also contained non-petroleum hydrocarbon chemicals of concern ("COCs"). Excavated soil was transported off-site for disposal at Waste Management's permitted Class II Altamont facility in Livermore, California. Based on Waste Management's records, approximately 1,650 tons of soil and asphalt were removed from the Building 637 Area and disposed of during these remedial activities. At two locations, where excavations were completed to a depth of 6 feet below ground surface, backfill activities included placement of ORC® to accomplish further source removal in the smear zone.

Verification soil sampling was conducted to confirm that soil remaining in place did not contain petroleum hydrocarbons or related constituents, or non-petroleum hydrocarbon COCs, above the established Building 637 Area cleanup levels. All final verification sampling results show residual chemical concentrations in soil are below the applicable cleanup levels. Table 3 summarizes the remedial actions performed at each of the tank sites in the Building 637 Area.

Figure 2 shows all of the Army and Trust soil sampling locations that are representative of soil remaining in the unsaturated zone at the Building 637 Area after remediation (i.e., samples that were collected from soil that was excavated and disposed of are not shown on Figure 2). Soil analytical results from investigations and remedial actions performed by the Army and the Trust at the Building 637 Area are included in tables in Appendix A. Selected representative analytical results are posted on figures included in Appendix A. The tables and figures in Appendix A were reproduced from prior reports (Montgomery Watson, 1999a; Trust, 1999a and 2000). The Montgomery Watson table (Table 2-2) and Trust Figure 2-1 in Appendix A include analytical results for some samples that were subsequently excavated in the corrective actions performed by the Trust in 1999.

As discussed in the Excavation Report, the soil remedial activities performed in the Building 637 Area support the following conclusions:

- Post-excavation verification sampling was sufficient to assess the effectiveness of soil remedial activities performed;
- Chemical concentrations detected in verification soil samples are below the soil cleanup levels established in the CAP and Work Plan; and
- On the basis of the remedial activities and verification sampling results, no further soil removal activity at the Site is required to satisfy the objectives of the CAP and Work Plan.

3.3.2 Groundwater Corrective Actions and Monitoring Results

Groundwater corrective actions at the Building 637 Area included backfilling the smear zone of selected excavations with ORC®-containing backfill material and injecting ORC® into the smear zone and shallow groundwater to achieve additional source removal. The ORC® backfill areas and the approximate locations of the injection points are shown on Figure 3.

Groundwater monitoring was also performed (1) to monitor groundwater flow directions in the A1 and A2 Zones, (2) to confirm that groundwater containing petroleum hydrocarbons above the saltwater protection zone cleanup levels is not migrating into the restored Crissy Field wetlands, (3) to evaluate the effects of ORC®-enhanced in-situ bioremediation, (4) to confirm that petroleum hydrocarbon concentrations in the Building 637 Area remain stable or decrease, and (5) to confirm that vinyl chloride concentrations in the A2 Zone have declined below MCLs.

As described in the Excavation Report, on 20 and 21 October 1999, the Trust constructed a network of seven groundwater monitoring wells to allow monitoring of groundwater flow directions in the A1 and A2 Zones and to confirm that groundwater containing Building 637 Area COCs above saltwater protection zone cleanup levels is not migrating into the Crissy Field wetlands. The monitoring network also enabled the evaluation of ORC®-enhanced in-situ bioremediation. The seven new wells were developed on 25 October 1999.

On 9 February 2000, the Trust conducted baseline groundwater sampling of three monitoring wells to determine current groundwater conditions. Between 28 February and 2 March 2000, ORC® was injected into the subsurface at the Building 637 Area to enhance in-situ bioremediation in the Building 637 Area. Approximately 2,700 pounds of ORC® was injected between three to seven feet below ground surface through 96 injection points (see Figure 3).

Groundwater monitoring of the new well network commenced in June 2000 for several of the wells and in May 2001 for the remaining wells. Certain existing wells have been monitored by the Army, and then by the Trust, since 1994. Table 4 summarizes the monitoring requirements and the analytical results for each of the Building 637 Area monitoring wells. All of the groundwater monitoring results for the Building 637 Area through the fourth quarter of 2003 are included in Appendix B, most of which is taken from Treadwell & Rollo's most recent groundwater monitoring report, entitled *Draft Semi-Annual Groundwater Monitoring Report, First and Second Quarters 2003, Presidio-Wide Quarterly Groundwater Monitoring Program, Presidio of San Francisco, California* and dated October 2003 (Treadwell & Rollo, 2003). The most recent data (i.e., from August 2003) were obtained from the Trust's database and will be published in Treadwell & Rollo's semi-annual groundwater monitoring report for the third and fourth quarters of 2003. No groundwater samples were collected from the Building 637 Area in the fourth quarter 2003.

The following sections summarize the findings of the groundwater corrective action and monitoring program.

3.3.2.1 Groundwater Flow Directions in the A1 and A2 Zones

Groundwater levels measured after the construction of the Crissy Fields wetlands indicate that groundwater flow directions in the A1 and A2 Zones have generally remained consistent over this time period (Treadwell & Rollo, 2003). Figures A-5-2 through A-5-5 included in Appendix B depict the measured groundwater elevations and potentiometric surfaces for the A1 and A2 Zones for the first two quarters in 2003.

In the A1 Zone, the groundwater flow direction in the Building 637 source area (i.e., south of Mason Street) is generally to the north. North of Mason Street, the groundwater flow direction shifts to the northeast, toward the wetlands. Prior to the restoration of the Crissy Field wetlands, the groundwater flow direction in the A1 Zone was to the north/northwest (Trust, 1999a). Thus, the early detection well (637-34) and the sentry monitoring wells (637-35 through 637-37) appear to be located appropriately to detect petroleum hydrocarbons and related constituents migrating in groundwater toward the wetlands (see Figure 3).

In the A2 Zone, the groundwater flow direction is to the northwest, which is consistent with observations prior to the restoration of the wetlands.

The CAP requirements to monitor the groundwater flow directions in the A1 and A2 Zones have been met and no additional water level monitoring is necessary in the Building 637 Area.

*3.3.2.2 Effects of Enhanced *in situ* Bioremediation*

At the time the CAP was written, the available groundwater monitoring data suggested that the petroleum hydrocarbon plume in the Building 637 Area was stable (Montgomery

Watson, 1999b; 1999c). The Trust agreed to use in situ bioremediation in an effort to achieve additional source removal. The CAP and Work Plan required the Trust to review the groundwater monitoring data to evaluate if the ORC® applications had any impact on dissolved oxygen and petroleum hydrocarbon concentrations at downgradient wells 637-26, 637-38, and 637-39 (Trust, 1999a). The dissolved oxygen and petroleum hydrocarbon groundwater monitoring data are included in Tables A-5-3 and A-5-4, respectively, in Appendix B of this report.

In February 2000, before the application of ORC®, dissolved oxygen concentrations in wells 637-26 and 637-38 were 0.54 mg/L and 0.70 mg/L, respectively. Dissolved oxygen concentrations in wells 637-26 and 637-38 were present at their highest measured concentrations (1.71 mg/L and 2.39 mg/L, respectively) in the first sampling round (June 2000) after the backfilling and injection of ORC®, approximately 9 months after excavation area C was backfilled with ORC® and 5 months after the injection of ORC®. Dissolved oxygen concentrations remained at or above 1 mg/L at well 637-38 through December 2001, but declined to 0.28 mg/L at well 637-26 by May 2001.² As shown on Figure 3, wells 637-26 and 637-38 are located immediately north of the ORC® injection area.

Well 637-39R, located north of excavation area F, was not sampled until August 2001, because the original well, well 637-39, installed at this location was damaged during the construction of the new bike path along Mason Street and was not replaced until 2001. Dissolved oxygen concentrations in this well were low at the time of the original 2001 sampling, probably because the ORC® had been placed in the upgradient excavation nearly two years before the well was monitored.

Total petroleum hydrocarbons quantified as gasoline (“TPH-g”) concentrations in groundwater samples from well 637-26 before the application of ORC® were much higher, on average, than after the ORC® application (1,400 ng/L versus 215 ug/L). Benzene, toluene, ethylbenzene, and xylenes (“BTEX”) concentrations have remained stable in this well (i.e., less than 6 ug/L) both before and after ORC® application. Methyl-tert-butyl ether (“MTBE”) concentrations have also remained stable (i.e., less than 3 ug/L) since monitoring for MTBE began in 2001.

Pre-ORC® monitoring data are not available for wells 637-38 and 637-39R because these wells were installed as part of the later CAP implementation. TPH-g concentrations have been stable in samples from well 637-38 and not detected in well 637-39R. BTEX and MTBE have generally not been detected in groundwater samples from wells 637-38 and 637-39R.

Overall, these data indicate that ORC® was effective at increasing the dissolved oxygen levels in groundwater for a period exceeding one year, promoting aerobic biodegradation.

² Measured dissolved oxygen levels in the Building 637 Area wells may have been affected by the use of different sampling methodologies over the course of the monitoring program. Thus, the measured dissolved oxygen levels may be an artifact of the sampling and may not necessarily represent the actual dissolved oxygen concentrations in groundwater.

The remedial actions at the Building 637 Area, both the excavations and ORC® applications have resulted in significant reductions in petroleum hydrocarbon concentrations immediately downgradient (north) of the source area. The CAP requirement to assess the effects of in situ bioremediation in the vicinity of the ORC® application have been met and no additional assessment of bioremediation is necessary in the Building 637 Area.

3.3.2.3 Assessment of Petroleum Hydrocarbon Migration to the Crissy Field Wetlands

Groundwater samples from the early detection well (637-34) and sentry monitoring wells (637-35 through 637-37) have been analyzed for TPH-g and BTEX. As indicated in Table 4, TPH-g and BTEX have never been detected in groundwater samples from wells 637-34, 637-36, and 637-37 in the three years these wells have been monitored.

Low levels of xylenes (0.63 ug/L) were detected in one groundwater sampling round from well 637-35, the northernmost sentry well; xylenes have not been detected in the five subsequent monitoring rounds. TPH-g, benzene, toluene, and ethylbenzene have not been detected in any of the groundwater samples from well 637-35.

These results indicate that petroleum hydrocarbons and related constituents from the Building 637 Area are not migrating at levels of concern to the Crissy Field wetlands. Therefore, the CAP requirements have been met and no additional groundwater monitoring is necessary in the Building 637 Area.

3.3.2.4 Petroleum Hydrocarbon Concentration Trends in Groundwater

As presented in Table 4, concentrations of petroleum hydrocarbons and related constituents (BTEX and MTBE) in groundwater samples from the Building 637 Area have been consistently less than the applicable cleanup levels. Review of the data presented in Appendix B indicates that BTEX and MTBE concentrations have been less than the MCLs in at least the last four consecutive sampling rounds at all of the monitoring locations. Concentrations of petroleum hydrocarbons and related constituents are stable or have decreased since the corrective actions have been implemented in the Building 637 Area.

3.3.2.5 Confirmation of Halogenated VOC Concentrations in the A2 Zone

As shown in Table 4, the CAP required groundwater samples from A2 Zone well 637-40, located north of Building 643, to be analyzed for halogenated VOCs until MCLs were achieved. Such monitoring was to be performed annually until the performance goal was met; that is, until two consecutive monitoring events indicated that concentrations were less than or equal to MCLs.

Vinyl chloride is the only halogenated VOC that has been detected in any groundwater samples from well 637-40 at a level that exceeds its MCL of 0.5 ug/L. Vinyl chloride has

not been detected (reporting limit of 0.5 ug/L) in the last two sampling rounds from this well (March 2002 and March 2003).

A2 Zone well 637-33 was also sampled for halogenated VOCs in the past, in 1998 and 1999. Halogenated VOCs were not detected in the eight sampling rounds from this well.

These data are tabulated in Table A-5-5 in Appendix B. Thus, the groundwater data demonstrate that halogenated VOCs are not present above MCLs in the A2 Zone and no additional monitoring is necessary to achieve the CAP requirement for halogenated VOC monitoring.

3.3.3 Exceptions to the CAP Requirements

The only exception to the requirements described in the CAP is related to groundwater monitoring frequency and duration. The CAP required two years of quarterly monitoring for well 637-39R (i.e., 8 rounds of sampling). As discussed in Section 3.3.2.2, the original well constructed at this location was damaged and could not be replaced and sampling initiated until August 2001. As of the third quarter 2003, the Trust completed seven rounds of monitoring for well 637-39R. Petroleum hydrocarbons and BTEX have not been detected in any of the groundwater samples from well 637-39R. Therefore, the Trust concludes it is appropriate to terminate groundwater monitoring of well 637-39R.

3.4 CASE CLOSURE SUMMARY AND PROTECTIVENESS STATEMENT

As described in Task 12 of the Order, requests for closure certification are to include a case closure summary with confirmation sampling results to demonstrate compliance with the Order. For groundwater-impacted sites, the case closure summary must demonstrate compliance with the preferred alternative in the CAP.

Table 3 provides a summary for each of the ASTs, USTs, and FDS lines in the Building 637 Area. Table 4 summarizes the groundwater monitoring program requirements and results. Together, these tables demonstrate that the requirements of the CAP have been met for the Building 637 Area, including all of the sites compiled in Table 1.

As shown in Tables 3 and 4, the available data demonstrate that the implemented remedies at the Building 637 Area achieved the level of cleanup and protection specified in the CAP for all exposure pathways, including recreational and terrestrial receptors within the Building 637 Area and aquatic receptors at the Crissy Field wetlands. As such, no further response action is needed to protect public health or the environment.

4. ASSESSMENT FOR UNRESTRICTED USE

The available soil data that are representative of concentrations remaining in residual soil at the Building 637 Area after implementation of the CAP were compared with the residential cleanup levels in the Order and in the Presidio-wide Cleanup Level document for non-petroleum constituents (EKI, 2002). As indicated in Table 3, chemical concentrations at all sampling locations are less than the residential cleanup levels.

For all groundwater monitoring wells, except well 637-40, halogenated VOC, BTEX, and MTBE concentrations measured in samples for at least the last four consecutive groundwater monitoring events have been less than MCLs. As discussed in Section 3.3.2.5, for well 637-40, MCLs have been achieved for the last two groundwater monitoring events. Petroleum hydrocarbon concentrations for at least the last four consecutive groundwater monitoring events have been less than the drinking water cleanup levels for these parameters listed in Table 7-6 of the Presidio-wide Cleanup Level Document (EKI, 2002).

Based on the corrective actions undertaken and soil and groundwater sampling results obtained, all portions of the Building 637 Area were found to meet unrestricted use standards, including residential.

5. REQUEST FOR CLOSURE CERTIFICATION

5.1 CLOSURE CERTIFICATION

Table 5 lists the individual sites within the Building 637 Area that the Trust is requesting the RWQCB and DTSC to certify. This Completion Report formally requests closure certification for the Building 637 Area, consistent with Task 12 of the Order. As shown in Section 4, the available data meet residential human health cleanup levels. Therefore, this document also requests that the RWQCB and DTSC's certification for the Building 637 Area specifically allow unrestricted land use.

The CAP and Work Plan were also approved by the DTSC in view of the low levels of non-petroleum constituents associated with tank 640.2 and halogenated VOCs in groundwater north of Building 643. Section 5.16 of the Consent Agreement between the Trust, NPS, and DTSC, dated 30 August 1999, identifies the requirements for regulatory certification that a site is adequately remediated (DTSC, 1999). This Completion Report is intended to provide the necessary documentation for such regulatory certification. Therefore, as indicated in Table 5, the Trust is requesting that DTSC provide closure certification for tank 640.2 and groundwater north of Building 643.

For the convenience of the RWQCB and DTSC, Table 5 has a signature line for each agency, after completion of its review of this document, to formally confirm these certifications. The Trust requests that the RWQCB and DTSC review, and, if satisfactory, sign and return a copy of Table 5 to the Trust to confirm that the requested certifications listed above have been accepted by the appropriate regulatory agencies.

After receipt of the closure certifications, the Trust will properly decommission all remaining groundwater monitoring wells in the Building 637 Area.

5.2 WAIVER OF FIVE-YEAR STATUS REPORT

In view of the completion of remedial actions, the results of the groundwater monitoring data, and the submittal of supporting documentation, the Trust asks that the requirements for a Five-Year Status Report, described in Task 13 of the Order, be waived for the Building 637 Area.

6. REFERENCES

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TABLE I
KNOWN CONTAMINATION SITES ADDRESSED IN
BUILDING 637 AREA CLOSURE CERTIFICATION REPORT
 Presidio of San Francisco, California

| <i>Tank Sites and Associated Information</i> | | |
|--|------------------|----------------------|
| <u>Tank Site Number</u> | <u>Tank Type</u> | <u>Tank Contents</u> |
| Tank 637.1 | AST | Gasoline |
| Tank 637.2 | AST | Gasoline |
| Tank 637.3 | AST | Gasoline |
| Tank 637.4 | AST | Diesel |
| Tank 637.5 | AST | Diesel |
| Tank 637.6 | AST | Diesel |
| Tank 637.VR | UST | Gasoline |
| Tank 638.OW | UST | Oil/Water Mix |
| Tank 640.1 | AST | Hydraulic Oil |
| Tank 640.2 (a) | UST | Waste Oil |
| Tank 640.3 | UST | Diesel |
| Tank 640.4 | UST | Diesel |
| Tank 640.5 | UST | Diesel |
| Tank 642.1 | AST | Diesel |
| Tank 642.2 | UST | Diesel |

| <i>Other Sites</i> |
|-----------------------------------|
| Building 638 |
| FDS Segments in Building 637 Area |

| <i>Groundwater Contamination At or Associated with Buildings</i> |
|--|
| Building 634 |
| Building 637 |
| Building 638 |
| Building 639 |
| Building 640 |
| Building 641 |
| Building 642 |
| Building 643 |

Notes:

(a) Tank 640.2 includes the associated oil-water separator.

Abbreviations:

AST = Aboveground Storage Tank

UST = Underground Storage Tank

FDS = Fuel Distribution System

TABLE 2A
CLEANUP LEVELS FOR PETROLEUM HYDROCARBONS AND RELATED COMPOUNDS
FROM BUILDING 637 AREA CORRECTIVE ACTION PLAN
 Presidio of San Francisco, California

| Chemical of Concern | Potential Soil Cleanup Levels (mg/Kg) (a) | | | Applicable Soil Cleanup Level (e) (mg/Kg) |
|--|---|---------------------------|--|---|
| | Recreational (b) | Terrestrial Receptors (c) | Soil Less Than 5 feet Above Groundwater (d) | |
| Gasoline | 2,400 | 610 | 1,690 | 610 |
| Diesel | 3,200 | 700 | 1,950 | 700 |
| Fuel Oil | 4,500 | 980 | 2,730 | 980 |
| Benzene | 1.5 | 40 | 1 | 1 |
| Toluene | 1,200 | 270 | 14 | 14 |
| Ethylbenzene | 1,900 | 125 | 19 | 19 |
| Xylenes (Total) | 2,500 | 55 | 4,340 | 55 |
| Total Carcinogenic PAHs | 13 | NV | 253 | 13 |
| <hr/> | | | | |
| Groundwater Cleanup Levels ($\mu\text{g/L}$) | | | | |
| | > 150 feet from wetlands (f) | | \leq 150 feet from wetlands (g) | |
| Gasoline | | 13,000 | 1,200 | |
| Diesel | | 15,000 | NV | |
| Fuel Oil | | 21,000 | 2,200 | |
| Benzene | | 650 | 510 | |
| Toluene | | 2,100 | 1,000 | |
| Ethylbenzene | | 1,000 | 43 | |
| Xylenes (Total) | | 232,000 | 130 | |

Notes:

- (a) Potential soil cleanup levels were obtained from the Site Cleanup Requirements identified in RWQCB Order 96-070, 15 May 1996. The most stringent value applies to the unsaturated zone soil (i.e., less than 4 feet bgs) in the Building 637 Area.
- (b) Recreational cleanup levels (Order 96-070, Table 1) are applicable for chemicals present at depths of 0 to 2 feet bgs. For purposes of the Building 637 Area CAP, recreational cleanup levels are applicable to the entire unsaturated zone.
- (c) Cleanup levels for terrestrial receptors (Order 96-070, Table 2) are applicable for chemicals present at depths of 0 to 3 feet bgs. For purposes of the Building 637 Area CAP, terrestrial receptor cleanup levels are applicable to the entire unsaturated zone.
- (d) The Building 637 Area is located within the Crissy Field Groundwater Area. The depth to groundwater in the Building 637 Area can be as shallow as 3 feet bgs. Therefore, cleanup levels for soil less than 5 feet above groundwater at Crissy Field (Order 96-070, Table 5) are applicable to the unsaturated zone at the Building 637 Area.
- (e) The applicable soil cleanup level is the most stringent (i.e., lowest) of the values listed.
- (f) The cleanup levels for groundwater at Crissy Field that is greater than 150 feet from the saltwater protection zone (i.e., more than 150 feet from the wetlands) are obtained from the FPALDR (Montgomery Watson, 1995).
- (g) The cleanup levels for groundwater within the saltwater protection zone (i.e., less than 150 feet from the wetlands) are obtained from Table 16 of the *Report of Petroleum and Hydrocarbon Bioassay and Point-of-Compliance Determinations, Saltwater Ecological Protection Zone, Presidio of San Francisco* (IT Corporation, 1997).

TABLE 2A
CLEANUP LEVELS FOR PETROLEUM HYDROCARBONS AND RELATED COMPOUNDS
FROM BUILDING 637 AREA CORRECTIVE ACTION PLAN
Presidio of San Francisco, California

Abbreviations:

RWQCB = California Regional Water Quality Control Board, San Francisco Bay Region

feet bgs = feet below ground surface

FPALDR = Fuel Product Action Level Development Report

NV = no value established

PAHs = polynuclear aromatic hydrocarbons

TABLE 2B
CLEANUP LEVELS FOR NON-PETROLEUM RELATED COMPOUNDS
FROM BUILDING 637 AREA CORRECTIVE ACTION PLAN
 Presidio of San Francisco, California

| Matrix | Chemical of Concern | Applicable Cleanup Level |
|-------------|--------------------------------------|--------------------------|
| Soil | PCBs (total) | 1 mg/Kg (a) |
| | DDT | 0.496 mg/Kg (b) |
| | DDD | 0.504 mg/Kg (b) |
| | DDE | 0.514 mg/Kg (b) |
| | Lead | 477 mg/Kg (a) |
| Groundwater | Trichloroethene (TCE) | 5 µg/L (c) |
| | 1,2-dichloroethane (1,2-DCA) | 0.5 µg/L (d) |
| | cis-1,2-dichloroethene (cis-1,2-DCE) | 6 µg/L (d) |
| | Vinyl chloride | 0.5 µg/L (d) |
| | PCBs (total) | 0.5 µg/L (c) |

Notes:

- (a) Cleanup level in soil was obtained from *Final Remedial Action Plan, Crissy Field Area, Presidio of San Francisco* - Table 2-4 (Army, 1998).
- (b) Cleanup level in soil was obtained from *Final Remedial Action Plan, Crissy Field Area, Presidio of San Francisco* - Section 1.5 and Appendix A Table 3.1 (Army, 1998).
- (c) Cleanup level in groundwater is the Federal Maximum Contaminant Level (U.S. EPA, January 1999).
- (d) Cleanup level in groundwater is the California Maximum Contaminant Level (U.S. EPA, January 1999).

Abbreviations

PCBs (total) = total polychlorinated biphenyls
 DDT = 1,1,1-trichloro-2,2-di(4-chlorophenyl)ethane
 DDD = 1,1-dichloro-2,2-di(4-chlorophenyl)ethane
 DDE = 1,1-dichloro-2,2-di(4-chlorophenyl)ethene

TABLE 3
BUILDING 637 AREA CASE CLOSURE SUMMARY
 Presidio of San Francisco, California

| Site Number | Tank Type and Contents | Tank Volume (in gallons) | Tank Status | Tank Address | Tank Location (Latitude; longitude) | Description of Remedial Investigations and Remedial Actions (a) | Effectiveness of Remedy | Proposed Future Work | Reference |
|-------------|------------------------|--------------------------|--------------|------------------|-------------------------------------|---|---|----------------------|---------------|
| 637.1 | AST Gasoline | 20,000 | Removed 1993 | 637 Mason Street | 37° 48' 09" N 122° 27' 43" W | Tank was part of POL area. Subsurface releases from underground piping between tanks and fuel islands and surface spills are the primary potential petroleum-related contaminant sources (4). POL operations ceased in 1989. The Army performed investigations from 1989 to 1992, which found soil and groundwater contaminated with petroleum hydrocarbons. When the Army removed the tanks in 1993, about 225 cubic yards of soil was removed from the top 18 inches of the tank, piping, and fuel island areas. Additional site characterization was performed in 1993 and 1994 (4). In 1994 and 1995, the Army operated an extraction system for 9 months to remove LNAPL and petroleum hydrocarbons in groundwater. About 25 gallons of LNAPL were removed. In 1995, the Army excavated approximately 1,000 cubic yards of soil northwest of the POL tanks. The excavation extended to groundwater to remove petroleum hydrocarbons in the smear zone (between approximately 4 and 6 feet deep) (6). The Army prepared a draft CAP for the Building 637 Area in 1997 and a revised draft CAP in 1999 (4). In 1999, the Presidio Trust prepared the final CAP for the Building 637 Area (6). In accordance with the CAP, the Trust performed additional excavation in 6 areas (Areas A through F), including 2 areas related to the POL (Area B to a depth of 4 feet and Area C to a depth of 6 feet), to remove identified remaining soil in the unsaturated zone and smear zone that exceeded cleanup levels (7). Approximately 1,650 tons of soil and asphalt were removed by the Trust from all 6 areas. To enhance biodegradation of remaining petroleum hydrocarbons in the smear zone, the Trust added ORC to backfill placed in the smear zone. In 2000, ORC was also injected into the subsurface north and northwest of the tanks to further enhance biodegradation of remaining petroleum hydrocarbons in the smear zone (7). Groundwater monitoring has been performed in this area since 1994 (6). Groundwater monitoring implemented in accordance with the CAP is summarized in Table 4. In the 86 unsaturated zone soil samples collected from Building 637 Area locations remaining after all excavations were complete, the maximum concentrations of TPH-d and TPH-fo were 500 mg/kg and 810 mg/kg, respectively (6, 7). These are less than the soil cleanup levels specified in the CAP for TPH-d and TPH-fo of 700 mg/kg and 980 mg/kg, respectively (6). These cleanup levels are lower than the residential cleanup levels for TPH-d and TPH-fo in the RWQCB Order (8). In the 49 remaining unsaturated zone soil samples analyzed for TPH-g, maximum concentrations of TPH-g, benzene, toluene, and xylene were 1.9 mg/kg, 0.084 mg/kg, 0.34 mg/kg, and 0.34 mg/kg, respectively (4). These are less than the soil cleanup levels specified in the CAP for TPH-g, benzene, toluene, and xylene of 610 mg/kg, 1 mg/kg, 14 mg/kg, and 55 mg/kg, respectively (6). Ethylbenzene was not detected in these soil samples. The maximum benzene concentration is also less than the residential cleanup level in the RWQCB Order of 0.6 mg/kg (8). Residential cleanup levels in the RWQCB Order for TPH-g, toluene, and xylene are higher than the soil cleanup levels specified in the CAP (6, 8). Therefore, the petroleum hydrocarbon and BTEX concentrations remaining in soil are less than the residential cleanup levels. | Soil data indicate that petroleum hydrocarbon concentrations in soil are less than applicable cleanup levels specified in the CAP and less than residential cleanup levels specified in the RWQCB Order. Groundwater monitoring performed from June 2000 to August 2003 indicates that TPH-g and BTEX concentrations in groundwater are also less than applicable cleanup levels specified in the CAP (see Table 4). | NFA (b) | 4, 6, 7, 8 |
| 637.2 | AST Gasoline | 20,000 | Removed 1993 | 637 Mason Street | 37° 48' 09" N 122° 27' 42" W | Tank was part of POL area. See above. | See above. | NFA (b) | 4, 6, 7, 8 |
| 637.3 | AST Gasoline | 20,000 | Removed 1993 | 637 Mason Street | 37° 48' 09" N 122° 27' 42" W | Tank was part of POL area. See above. | See above. | NFA (b) | 4, 6, 7, 8 |
| 637.4 | AST Diesel | 5,000 | Removed 1993 | 637 Mason Street | 37° 48' 09" N 122° 27' 43" W | Tank was part of POL area. See above. | See above. | NFA (b) | 4, 6, 7, 8 |
| 637.5 | AST Diesel | 5,000 | Removed 1993 | 637 Mason Street | 37° 48' 09" N 122° 27' 43" W | Tank was part of POL area. See above. | See above. | NFA (b) | 4, 6, 7, 8 |
| 637.6 | AST Diesel | 5,000 | Removed 1993 | 637 Mason Street | 37° 48' 09" N 122° 27' 43" W | Tank was part of POL area. See above. | See above. | NFA (b) | 4, 6, 7, 8 |
| 637.VR | UST Gasoline | 250 | Removed 1993 | 637 Mason Street | 37° 48' 09" N 122° 27' 42" W | Tank was part of POL area. See above. | See above. | NFA (b) | 4, 6, 7, 8 |
| 638.OW | UST Oil/Water Mix | 250 | Removed 1993 | 638 Mason Street | 37° 48' 10" N 122° 27' 41" W | Tank was associated with an oil/water separator near the POL area (4). POL operations and use of the oil/water separator ceased in 1989. The Army performed investigations from 1989 to 1994, which found soil contaminated with petroleum hydrocarbons above applicable cleanup levels (4, 6). The tank and associated oil/water separator were removed in 1993. The Army prepared a draft CAP for the Building 637 Area in 1997 and a revised draft CAP in 1999 (4). In 1999, the Presidio Trust prepared the final CAP for the Building 637 Area (6). In accordance with the CAP, the Trust performed additional excavation in 6 areas (Areas A through F). Area A, which was located around tank 638.OW, was excavated to depths of 2 and 4 feet to remove identified remaining soil in the unsaturated zone that exceeded cleanup levels (7). Approximately 1,650 tons of soil and asphalt were removed by the Trust from all 6 areas. In the 11 soil samples collected from Area A locations remaining after the excavation was complete, the maximum concentrations of TPH-d and TPH-fo were 16 mg/kg and 87 mg/kg, respectively (7). These concentrations are less than the soil cleanup levels specified in the CAP for TPH-d and TPH-fo of 700 mg/kg and 980 mg/kg, respectively (6). These concentrations are also lower than the residential cleanup levels for TPH-d and TPH-fo in the RWQCB Order (8). | Soil data indicate that petroleum hydrocarbon concentrations in soil are less than applicable cleanup levels specified in the CAP and less than residential cleanup levels specified in the RWQCB Order. Releases from this tank do not appear to have affected groundwater. | NFA (b) | 4, 6, 7, 8 |
| 640.1 | AST Hydraulic Oil | 150 | Removed 1996 | 640 Mason Street | 37° 48' 10" N 122° 27' 45" W | Tank was used to store hydraulic fluid for a vehicle hoist in Building 640 (4). When the Army removed the tank in 1996, approximately 2,000 cubic yards of soil to the north and northeast was excavated to groundwater (encountered at depths of 4 to 6 feet). This excavation led to the discovery of tanks 640.3, 640.4, and 640.5, which were also removed at that time (4). The Army prepared a draft CAP for the Building 637 Area in 1997 and a revised draft CAP in 1999 (4). In 1999, the Presidio Trust prepared the final CAP for the Building 637 Area (6). In accordance with the CAP, the Trust performed additional excavation in 6 areas (Areas A through F). Area E, which was located near tank 640.1, was excavated to a depth of 4 feet to remove identified remaining soil in the unsaturated zone that exceeded cleanup levels (7). Approximately 1,650 tons of soil and asphalt were removed by the Trust from all 6 areas. In the 4 soil samples collected from Area E locations remaining after the excavation was complete, the maximum concentrations of TPH-d and TPH-fo were 53 mg/kg and 440 mg/kg, respectively (7). These concentrations are less than the soil cleanup levels specified in the CAP for TPH-d and TPH-fo of 700 mg/kg and 980 mg/kg, respectively (6). These concentrations are also lower than the residential cleanup levels for TPH-d and TPH-fo in the RWQCB Order (8). | Soil data indicate that petroleum hydrocarbon concentrations in soil are less than applicable cleanup levels specified in the CAP and less than residential cleanup levels specified in the RWQCB Order. Releases from this tank do not appear to have affected groundwater. | NFA (b) | 4, 6, 7, 8 |
| 640.2 | UST Waste Oil | 300 | Removed 1996 | 640 Mason Street | 37° 48' 11" N 122° 27' 45" W | Tank stored waste oil from an associated oil/water separator (6). The Army removed the tank and associated oil/water separator in 1996. The Army prepared a draft CAP in 1997 for the Building 637 Area and a revised draft CAP in 1999 (4). In 1999, the Presidio Trust prepared the final CAP for the Building 637 Area (6). In accordance with the CAP, the Trust performed additional excavation in 6 areas (Areas A through F). Area F, which was located around tank 640.2, was excavated to a depth of 6 feet to remove identified remaining soil in the unsaturated zone and smear zone that exceeded cleanup levels (7). Approximately 1,650 tons of soil and asphalt were removed by the Trust from all 6 areas. To enhance biodegradation of remaining petroleum hydrocarbons in the smear zone, ORC was added to backfill placed in the smear zone (7). Groundwater monitoring implemented in accordance with the CAP is summarized in Table 4. Four excavation sidewall samples were collected from Area F. Pesticides and PCBs were not detected in these soil samples. The maximum concentrations of TPH-g and TPH-fo in these soil samples were 140 mg/kg and 76 mg/kg, respectively (7). These concentrations are less than the soil cleanup levels specified in the CAP for TPH-g and TPH-fo of 610 mg/kg and 980 mg/kg, respectively (6). These concentrations are also lower than the residential cleanup levels for TPH-d and TPH-fo in the RWQCB Order (8). | Soil data indicate that concentrations of petroleum hydrocarbons, pesticides, and PCBs in soil are less than applicable cleanup levels specified in the CAP and less than residential cleanup levels specified in the RWQCB Order and the Presidio-wide Cleanup Level Document. Groundwater monitoring performed from May 2001 to March 2003 indicates that TPH-g and BTEX concentrations in groundwater are also less than applicable cleanup levels specified in the CAP (see Table 4). | NFA (b) | 4, 6, 7, 8 |
| 640.3 | UST Diesel | 250 | Removed 1996 | 640 Mason Street | 37° 48' 10" N 122° 27' 45" W | Tanks 640.3, 640.4, and 640.5 were discovered in 1996 during excavation of soil near tank 640.1. These tanks were removed at that time (4). The tanks were believed to store diesel (2). The 1996 excavation was located north of these tanks, extended to groundwater, and removed approximately 2,000 cubic yards of soil (4). The Army prepared a draft CAP for the Building 637 Area in 1997 and a revised draft CAP in 1999 (4). In 1999, the Presidio Trust prepared the final CAP for the Building 637 Area (6). In accordance with the CAP, the Trust performed additional excavation in 6 areas (Areas A through F), including an area northeast of these former tanks (Area C to a depth of 6 feet), to remove identified remaining soil in the unsaturated zone and smear zone that exceeded cleanup levels (7). Approximately 1,650 tons of soil and asphalt were removed by the Trust from all 6 areas. To enhance biodegradation of remaining petroleum hydrocarbons in the smear zone, the Trust added ORC to backfill placed in the smear zone. In 2000, ORC was injected into the subsurface north of these tanks to further enhance biodegradation of remaining petroleum hydrocarbons in the smear zone (7). Groundwater monitoring has been performed in this area since 1994 (6). Groundwater monitoring implemented in accordance with the CAP is summarized in Table 4. In the 86 unsaturated zone soil samples collected from Building 637 Area locations remaining after all the Building 637 area excavations were complete, the maximum concentrations of TPH-d and TPH-fo were 500 mg/kg and 810 mg/kg, respectively (6, 7). These concentrations are less than the soil cleanup levels specified in the CAP for TPH-d and TPH-fo of 700 mg/kg and 980 mg/kg, respectively (6). These concentrations are also lower than the residential cleanup levels for TPH-d and TPH-fo in the RWQCB Order (8). In the 49 remaining unsaturated zone soil samples analyzed for TPH-g, maximum concentrations of TPH-g, benzene, toluene, and xylenes were 1.9 mg/kg, 0.084 mg/kg, 0.34 mg/kg, and 0.34 mg/kg, respectively (4). These are less than the soil cleanup levels specified in the CAP for TPH-g, benzene, toluene, and xylenes of 610 mg/kg, 1 mg/kg, 14 mg/kg, and 55 mg/kg, respectively (6). Ethylbenzene was not detected in these soil samples. The maximum benzene concentration is also less than the residential cleanup level in the RWQCB Order of 0.6 mg/kg (8). The TPH-g, toluene, and xylenes concentrations are also less than the residential soil cleanup levels specified in the RWQCB Order (6, 8). | Soil data indicate that petroleum hydrocarbon concentrations in soil are less than applicable cleanup levels specified in the CAP and less than residential cleanup levels specified in the RWQCB Order. Groundwater monitoring performed from June 2000 to August 2003 indicates that TPH-g and BTEX concentrations in groundwater are also less than applicable cleanup levels specified in the CAP (see Table 4). | NFA (b) | 2, 4, 6, 7, 8 |
| 640.4 | UST Diesel | 250 | Removed 1996 | 640 Mason Street | 37° 48' 10" N 122° 27' 44" W | See above. | See above. | NFA (b) | 2, 4, 6, 7, 8 |
| 640.5 | UST Diesel | 500 | Removed 1996 | 640 Mason Street | 37° 48' 10" N 122° 27' 44" W | See above. | See above. | NFA (b) | 2, 4, 6, 7, 8 |

TABLE 3
BUILDING 637 AREA CASE CLOSURE SUMMARY
 Presidio of San Francisco, California

| Site Number | Tank Type and Contents | Tank Volume (in gallons) | Tank Status | Tank Address | Tank Location (latitude; longitude) | Description of Remedial Investigations and Remedial Actions (a) | Effectiveness of Remedy | Proposed Future Work | Reference |
|-------------|------------------------|--------------------------|--------------|------------------|-------------------------------------|--|--|----------------------|---------------|
| 642.1 | AST Diesel | 500 | Removed 1996 | 642 Mason Street | 37° 48' 11" N 122° 27' 44" W | The Army removed the tank in 1996 (3). Soil under the tank was sampled at that time and found to contain petroleum hydrocarbons above applicable cleanup levels (6). The Army prepared a draft CAP in 1997 for the Building 637 Area and a revised draft CAP in 1999 (4). In 1999, the Presidio Trust prepared the final CAP for the Building 637 Area (6). In accordance with the CAP, the Trust performed additional excavation in 6 areas (Areas A through F). Area D, which was located around tank 642.1, was excavated to a depth of 4 feet to remove identified remaining soil in the unsaturated zone that exceeded cleanup levels (7). Approximately 1,650 tons of soil and asphalt were removed by the Trust from all 6 areas. In the 4 soil samples collected from Area D locations remaining after the excavation was complete, the maximum concentration of TPH-fo was 83 mg/kg (7). This concentration is less than the soil cleanup level specified in the CAP for TPH-fo of 980 mg/kg (6). TPH-d was not detected in these soil samples. The maximum TPH-fo concentration remaining at this site is lower than the residential cleanup level for TPH-fo in the RWQCB Order (8). | Soil data indicate that petroleum hydrocarbon concentrations in soil are less than applicable cleanup levels specified in the CAP and less than residential cleanup levels specified in the RWQCB Order. Releases from this tank do not appear to have affected groundwater. | NFA (b) | 3, 4, 6, 7, 8 |
| 642.2 | UST Diesel | 500 | Removed 1995 | 642 Mason Street | 37° 48' 11" N 122° 27' 43" W | Tank was used to store diesel for an auxiliary generator (1). The Army removed the tank in 1995. A soil sample collected at the time of tank removal contained non-detectable concentrations of TPH-d and 210 mg/kg of TPH-fo, which is less than the cleanup level for TPH-fo of 980 mg/kg (1). The Army indicated that this tank received a "No Further Action" letter from the City and County of San Francisco (6). The Army prepared a draft CAP in 1997 for the Building 637 Area and a revised draft CAP in 1999 (4). In 1999, the Presidio Trust prepared the final CAP for the Building 637 Area (6). Excavation Area D extended into the former location of tank 642.2 (7). In the 4 soil samples collected from Area D locations remaining after the excavation was complete, the maximum concentration of TPH-fo was 83 mg/kg (7). This concentration is less than the soil cleanup level specified in the CAP for TPH-fo of 980 mg/kg (6). TPH-d was not detected in these soil samples. The maximum TPH-fo concentration remaining at this site is lower than the residential cleanup level for TPH-fo in the RWQCB Order (8). | This tank previously received a NFA letter from the City and County of San Francisco. Soil data indicate that petroleum hydrocarbon concentrations in soil are less than applicable cleanup levels specified in the CAP and less than residential cleanup levels specified in the RWQCB Order. Releases from this tank do not appear to have affected groundwater. | NFA (b) | 1, 4, 6, 7, 8 |
| FDS | Pipeline Fuel Oil | - | Removed 1998 | - | - | The Army removed FDS pipelines in the Building 637 Area in 1998 (4). The Building 637 area includes portions of FDS areas CF2, CF-3, CF-4, and CF-12, as identified on the index map of the FDS removal report (5). After FDS removal, some soil exceeding applicable cleanup levels remained. The Army prepared a draft CAP in 1997 for the Building 637 Area and a revised draft CAP in 1999 (4). In 1999, the Presidio Trust prepared the final CAP for the Building 637 Area (6). In accordance with the CAP, the Trust performed additional excavation in 6 areas (Areas A through F). Area B, which included the former FDS area exceeding cleanup levels, was excavated to a depth of 4 feet to remove identified remaining soil in the unsaturated zone that exceeded cleanup levels (7). Approximately 1,650 tons of soil and asphalt were removed by the Trust from all 6 areas. In the 4 soil samples collected from Area B locations remaining after the excavation was complete, the maximum concentrations of TPH-d and TPH-fo were 210 mg/kg and 540 mg/kg, respectively (7). These concentrations are less than the soil cleanup levels specified in the CAP for TPH-d and TPH-fo of 700 mg/kg and 980 mg/kg, respectively (6). These concentrations are also lower than the residential cleanup levels for TPH-d and TPH-fo in the RWQCB Order (8). | Soil data indicate that petroleum hydrocarbon concentrations in soil are less than applicable cleanup levels specified in the CAP and less than residential cleanup levels specified in the RWQCB Order. Releases from FDS locations in the Building 637 Area do not appear to have affected groundwater. | NFA (b) | 4, 5, 6, 7, 8 |

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- 1 Montgomery Watson, *Closure Report, Underground Storage Tank, Building 642, Old Mason Street, Presidio of San Francisco*, 28 March 1996.
- 2 Allied Technology Group, *Underground Storage Tank Removal Report for Presidio of San Francisco, Building # 640, San Francisco, California*, January 1997.
- 3 IT Corporation, *Aboveground Storage Tank Closure Report, Building 642, Presidio of San Francisco*, March 1997.
- 4 Montgomery Watson, *Building 637 Area Revised Draft Final Corrective Action Plan, Presidio of San Francisco*, April 1999.
- 5 IT Corporation, *Fuel Distribution System Removal Report, Presidio of San Francisco, California*, May 1999.
- 6 The Presidio Trust, *Final Corrective Action Plan, Building 637 Area, The Presidio of San Francisco*, August 1999.
- 7 The Presidio Trust, *Excavation Report for the Building 637 Area, The Presidio of San Francisco*, 22 June 2000.
- 8 California Regional Water Quality Control Board, San Francisco Bay Region, Order No. R2-2003-0080, *Revised Site Cleanup Requirements and Rescission of Order No. 91-082 and Order No. 96-070 for the Property Located at the Presidio of San Francisco, City and County of San Francisco*, 20 August 2003.

Notes:

(a) Background about these sites and results of the implementation of the Presidio Trust's CAP are described in more detail in the CAP and the Building 637 Area Excavation Report. Soil sampling data are included in Appendix A. Former tank locations and excavation areas are shown on Figure 2. Specific references are provided in parentheses within the table.

(b) NFA indicates the requirements of the CAP have been met and no further action is necessary, except for the proper decommissioning of the existing monitoring wells in the Building 637 Area.

Abbreviations:

| | |
|--------|--|
| AST | above-ground storage tank |
| BTEX | benzene, toluene, ethylbenzene, and xylenes |
| CAP | Final Corrective Action Plan, Building 637 Area |
| FDS | fuel distribution system |
| LNAPL | light non-aqueous phase liquid |
| NFA | no further action |
| DRC | Oxygen Release Compound, provided by Regenesis |
| Order | RWQCB Order No. R2-2003-0080, <i>Revised Site Cleanup Requirements and Rescission of Order No. 91-082 and Order No. 96-070 for the Property Located at the Presidio of San Francisco, City and County of San Francisco</i> |
| PCBs | polychlorinated biphenyls |
| POL | petroleum-oil-lubricant |
| RWQCB | California Regional Water Quality Control Board, San Francisco Bay Region |
| TPH-g | total petroleum hydrocarbons quantified as gasoline |
| TPH-d | total petroleum hydrocarbons quantified as diesel |
| TPH-fb | total petroleum hydrocarbons quantified as fuel oil |
| UST | underground storage tank |

TABLE 4
STATUS OF GROUNDWATER MONITORING - BUILDING 637 AREA
 Presidio of San Francisco, California

| Well ID | Water-Bearing Zone | Objectives of Monitoring Well | Analytes and Analytical Methods (a) | Required Monitoring Frequency and Duration | Groundwater Monitoring Summary (b) | Proposed Future Work |
|---------|--------------------|--|---|--|--|----------------------|
| 637-01R | A2 | Monitor groundwater flow direction in A2 Zone. Measure TPH-g and BTEX. | TPH-g (EPA 8015M) BTEX (EPA 8021B or 8260B) | Quarterly for 1 year. | Remedial activities were completed in March 2000. The Presidio Trust collected groundwater samples from this well 8 times from June 2000 to December 2002. The maximum TPH-g and xylenes concentrations detected in groundwater were 190 ug/l and 0.9 ug/l, respectively, which are less than the applicable groundwater cleanup levels for TPH-g and xylenes of 13,000 ug/l and 232,000 ug/l, respectively. Benzene, toluene, and ethylbenzene were not detected in groundwater samples. | NFA (c) |
| 637-19 | A2 | Monitor groundwater flow direction in A2 Zone. Measure TPH-g and BTEX. | TPH-g (EPA 8015M) BTEX (EPA 8021B or 8260B) | Quarterly for 1 year. | Remedial activities were completed in March 2000. The Presidio Trust collected groundwater samples from this well 7 times from May 2001 to December 2002. The maximum xylenes concentration detected in groundwater was 2.7 ug/l, which is less than the applicable groundwater cleanup level for xylenes of 232,000 ug/l. TPH-g, benzene, toluene, and ethylbenzene were not detected in groundwater samples. | NFA (c) |
| 637-26 | A1 | Monitor groundwater flow direction in A1 Zone. Measure TPH-g, BTEX, and DO downgradient of ORC treatment area. | TPH-g (EPA 8015M) BTEX (EPA 8021B or 8260B) DO (DO Field Probe) | Quarterly for 2 years. | Remedial activities were completed in March 2000. The Presidio Trust collected groundwater samples from this well 8 times from June 2000 to December 2002. The maximum TPH-g, ethylbenzene, and xylenes concentrations detected in groundwater were 620 ug/l, 2.4 ug/l, and 4.9 ug/l, respectively, which are less than the applicable groundwater cleanup levels for TPH-g, ethylbenzene, and xylenes of 13,000 ug/l, 1,000 ug/l, and 232,000 ug/l, respectively. Benzene and toluene were not detected in groundwater samples. | NFA (c) |

TABLE 4
STATUS OF GROUNDWATER MONITORING - BUILDING 637 AREA
 Presidio of San Francisco, California

| Well ID | Water-Bearing Zone | Objectives of Monitoring Well | Analytes and Analytical Methods (a) | Required Monitoring Frequency and Duration | Groundwater Monitoring Summary (b) | Proposed Future Work |
|---------|--------------------|---|--|--|---|----------------------|
| 637-27 | A1 | Monitor groundwater flow direction in A1 Zone. Measure TPH-g and BTEX. | TPH-g (EPA 8015M) BTEX (EPA 8021B or 8260B) | Quarterly for 1 year. | Remedial activities were completed in March 2000. The Presidio Trust collected groundwater samples from this well 7 times from May 2001 to December 2002. TPH-g and BTEX were not detected in groundwater samples. | NFA (c) |
| 637-33 | A2 | Monitor groundwater flow direction in A2 Zone. Measure TPH-g and BTEX. | TPH-g (EPA 8015M) BTEX (EPA 8021B or 8260B) | Quarterly for 1 year. | Remedial activities were completed in March 2000. The Presidio Trust collected groundwater samples from this well 7 times from May 2001 to December 2002. TPH-g and BTEX were not detected in groundwater samples. | NFA (c) |
| 637-34 | A1 | Monitor groundwater flow direction in A1 Zone. Wetland early-detection well (west of sentry wells). | TPH-g (EPA 8015M) BTEX (EPA 8021B or 8260B) | Quarterly for 2 years, semi-annually thereafter. (d) | Remedial activities were completed in March 2000. The Presidio Trust collected groundwater samples from this well 10 times from June 2000 to August 2003. TPH-g and BTEX were not detected in groundwater samples. | NFA (c) |
| 637-35 | A1 | Monitor groundwater flow direction in A1 Zone. Wetland sentry well. | TPH-g (EPA 8015M) BTEX (EPA 8021B or 8260B) | Quarterly for 2 years, semi-annually thereafter. (d) | Remedial activities were completed in March 2000. The Presidio Trust collected groundwater samples from this well 10 times from June 2000 to August 2003. The maximum xylenes concentration detected in groundwater was 0.63 µg/l, which is less than the applicable groundwater cleanup level for xylenes (within 150 feet of wetlands) of 130 µg/l. TPH-g, benzene, toluene, and ethylbenzene were not detected in groundwater samples. TPH-g and BTEX concentrations have been non-detect for 5 consecutive monitoring events. | NFA (c) |
| 637-36 | A1 | Monitor groundwater flow direction in A1 Zone. Wetland sentry well. | TPH-g (EPA 8015M) BTEX (EPA 8021B or 8260B) | Quarterly for 2 years, semi-annually thereafter. (d) | Remedial activities were completed in March 2000. The Presidio Trust collected groundwater samples from this well 10 times from May 2001 to August 2003. TPH-g and BTEX were not detected in groundwater samples. | NFA (c) |

TABLE 4
STATUS OF GROUNDWATER MONITORING - BUILDING 637 AREA
 Presidio of San Francisco, California

| Well ID | Water-Bearing Zone | Objectives of Monitoring Well | Analytes and Analytical Methods (a) | Required Monitoring Frequency and Duration | Groundwater Monitoring Summary (b) | Proposed Future Work |
|---------|--------------------|--|---|--|--|----------------------|
| 637-37 | A1 | Monitor groundwater flow direction in A1 Zone. Wetland sentry well. | TPH-g (EPA 8015M) BTEX (EPA 8021B or 8260B) | Quarterly for 2 years, semi-annually thereafter. (d) | Remedial activities were completed in March 2000. The Presidio Trust collected groundwater samples from this well 10 times from June 2000 to August 2003. TPH-g and BTEX were not detected in groundwater samples above laboratory reporting limits. | NFA (c) |
| 637-38 | A1 | Monitor groundwater flow direction in A1 Zone. Measure TPH-g, BTEX, and DO downgradient of ORC treatment area. | TPH-g (EPA 8015M) BTEX (EPA 8021B or 8260B) DO (DO Field Probe) | Quarterly for 2 years. | Remedial activities were completed in March 2000. The Presidio Trust collected groundwater samples from this well 9 times from June 2000 to March 2003. The maximum TPH-g, toluene, and xylenes concentrations detected in groundwater were 320 ug/l, 4.8 ug/l, and 1.2 ug/l, respectively, which are less than the applicable groundwater cleanup levels for TPH-g, toluene, and xylenes of 13,000 ug/l, 2,100 ug/l, and 232,000 ug/l, respectively. Benzene and ethylbenzene were not detected in groundwater samples. | NFA (c) |
| 637-39R | A1 | Monitor groundwater flow direction in A1 Zone. Measure TPH-g, BTEX, and DO downgradient of ORC treatment area. | TPH-g (EPA 8015M) BTEX (EPA 8021B or 8260B) DO (DO Field Probe) | Quarterly for 2 years. | Remedial activities were completed in March 2000. The Presidio Trust collected groundwater samples from this well 7 times from August 2001 to March 2003. TPH-g and BTEX were not detected in groundwater samples. | NFA (c) |

TABLE 4
STATUS OF GROUNDWATER MONITORING - BUILDING 637 AREA
 Presidio of San Francisco, California

| Well ID | Water-Bearing Zone | Objectives of Monitoring Well | Analytes and Analytical Methods (a) | Required Monitoring Frequency and Duration | Groundwater Monitoring Summary (b) | Proposed Future Work |
|---------|--------------------|--|-------------------------------------|---|---|----------------------|
| 637-40 | A2 | Monitor groundwater flow direction in A2 Zone. Measure HVOC concentrations until MCLs are achieved. | HVOCs (EPA 8260) | Annually until MCLs achieved for 2 consecutive monitoring events. | Remedial activities were completed in March 2000. The Presidio Trust collected groundwater samples from this well 8 times from May 2001 to March 2003. The maximum TPH-g, benzene, toluene, ethylbenzene, and xylenes concentrations detected in groundwater were 85 ng/l, 0.88 ug/l, 0.97 ug/l, 1.2 ug/l, and 5.6 ug/l, respectively. These concentrations are less than the applicable groundwater cleanup levels for TPH-g, benzene, toluene, ethylbenzene, and xylenes of 13,000 ng/l, 650 ug/l, 2,100 ug/l, 1,000 ug/l, and 232,000 ug/l, respectively. The maximum acetone, c-1,2-DCE, PCE, and vinyl chloride concentrations detected in groundwater were 20 ug/l, 0.9 ug/l, 1.7 ug/l, and 1.1 ug/l, respectively. An MCL for acetone does not exist. The c-1,2-DCE and PCE concentrations are less than their MCLs of 6 ug/l and 5 ug/l, respectively. The maximum vinyl chloride concentration is greater than its MCL of 0.5 ng/l. No other VOCs have been detected. All HVOC concentrations have been below their MCLs for the 2 most recent consecutive monitoring events; thus, the HVOC cleanup level has been met. | NFA (c) |

TABLE 4
STATUS OF GROUNDWATER MONITORING - BUILDING 637 AREA
 Presidio of San Francisco, California

| Well ID | Water-Bearing Zone | Objectives of Monitoring Well | Analytical Methods (a) | Required Monitoring Frequency and Duration | Groundwater Monitoring Summary (b) | Proposed Future Work |
|----------|--------------------|--|---|--|---|----------------------|
| LF07GW11 | A1 | Monitor groundwater flow direction in A1 Zone. Measure TPH-g, BTEX, and DO downgradient of ORC treatment area. | TPH-g (EPA 8015M) BTEX (EPA 8021B or 8260B) DO (DO Field Probe) | Quarterly for 2 years. | Remedial activities were completed in March 2000. The Presidio Trust collected groundwater samples from this well 9 times from July 2000 to December 2002. The maximum TPH-g, benzene, toluene, and xylenes concentrations detected in groundwater were 240 ug/l, 2.6 ug/l, 0.7 ug/l, and 0.73 ug/l, respectively. These concentrations are less than the applicable groundwater cleanup levels for TPH-g, benzene, toluene, and xylenes of 13,000 ng/l, 650 ng/l, 2,100 ng/l, and 232,000 ng/l, respectively. Ethylbenzene has not been detected in groundwater samples. | NFA (c) |

Notes:

- (a) Analytical methods are U.S. Environmental Protection Agency methods (SW-846, Update III), unless otherwise indicated.
- (b) Groundwater monitoring data are tabulated in Appendix B of this document.
- (c) The results of groundwater monitoring indicated the requirements of the CAP have been met and no further action ("NFA") is necessary for groundwater, except for the proper decommissioning of the existing monitoring wells.
- (d) In accordance with the CAP, the Trust may request to terminate groundwater monitoring after 3 years if at least one of the following conditions is met: (1) the groundwater flow direction in the Building 637 Area is consistently to the north or northwest (i.e., not toward the wetlands); (2) TPH-g has not been detected in the wells for the last four consecutive rounds of monitoring; or (3) the trend of TPH-g concentrations is shown to be stable or decreasing using a statistical evaluation.

Abbreviations:

| | | | |
|-----------|---|-------|---|
| BTEX | benzene, toluene, ethylbenzene, and xylenes | NFA | no further action |
| c-1,2-DCE | cis-1,2-dichloroethene | ORC | Oxygen Release Compound, provided by Regenesis |
| CAP | Final Corrective Action Plan, Building 637 Area | PCE | tetrachloroethene |
| DO | dissolved oxygen | TPH-g | total petroleum hydrocarbons quantified as gasoline |
| HVOCs | halogenated volatile organic chemicals | VOCs | volatile organic compounds |
| MCLs | Maximum Contaminant Levels | | |

TABLE 5
SUMMARY OF SITES FOR CLOSURE CERTIFICATION
BUILDING 637 AREA
 Presidio of San Francisco, California

| Building 637 Area Site | Closure Certification Requested | |
|-----------------------------------|---------------------------------|------|
| | RWQCB | DTSC |
| <i>Tank Sites</i> | | |
| Tank 637.1 | Yes | - |
| Tank 637.2 | Yes | - |
| Tank 637.3 | Yes | - |
| Tank 637.4 | Yes | - |
| Tank 637.5 | Yes | - |
| Tank 637.6 | Yes | - |
| Tank 637.VR | Yes | - |
| Tank 637.OW | Yes | - |
| Tank 640.1 | Yes | - |
| Tank 640.2 | Yes | Yes |
| Tank 640.3 | Yes | - |
| Tank 640.4 | Yes | - |
| Tank 640.5 | Yes | - |
| Tank 642.1 | Yes | - |
| Tank 642.2 | Yes | - |
| <i>Other Sites</i> | | |
| Building 638 | Yes | - |
| FDS Segments in Building 637 Area | Yes | - |
| <i>Groundwater Contamination</i> | | |
| Building 634 | Yes | - |
| Building 637 | Yes | - |
| Building 638 | Yes | - |
| Building 639 | Yes | - |
| Building 640 | Yes | - |
| Building 641 | Yes | - |
| Building 642 | Yes | - |
| Building 643 | Yes | Yes |

Based on the available information and documentation provided by the Presidio Trust in accordance with Task 12 of RWQCB Order No. R2-2003-0080, the California Environmental Protection Agency, Regional Water Quality Control Board ("RWQCB") certifies that the above marked sites and associated tanks have been closed and are suitable for unrestricted use. By signing below, RWQCB acknowledges that the remedial requirements for the above marked sites have been met and no further action is required.

Signed: _____ Date: _____

Name: _____ Title: _____

Based on the available information and documentation, the California Environmental Protection Agency, Department of Toxic Substances Control ("DTSC") certifies that the above marked sites have been closed and are suitable for unrestricted use. In addition, DTSC hereby provides a Letter of Certification for the above marked sites in accordance with Section 5.16 of the Consent Agreement between the Trust, NPS, and DTSC, dated 30 August 1999. By signing below, DTSC certifies that the remedial requirements for the above marked sites have been met and no further action is required.

Signed: _____ Date: _____

Name: _____ Title: _____



0 1000 2000
(Approximate Scale in Feet)

Notes:

1. All locations are approximate.
2. Basemap developed from site plan provided by Department of Interior, National Park Service and topographic map, dated 5 June 1997, prepared by Tawill, Inc.
3. PSHH is the Public Health Service Hospital.

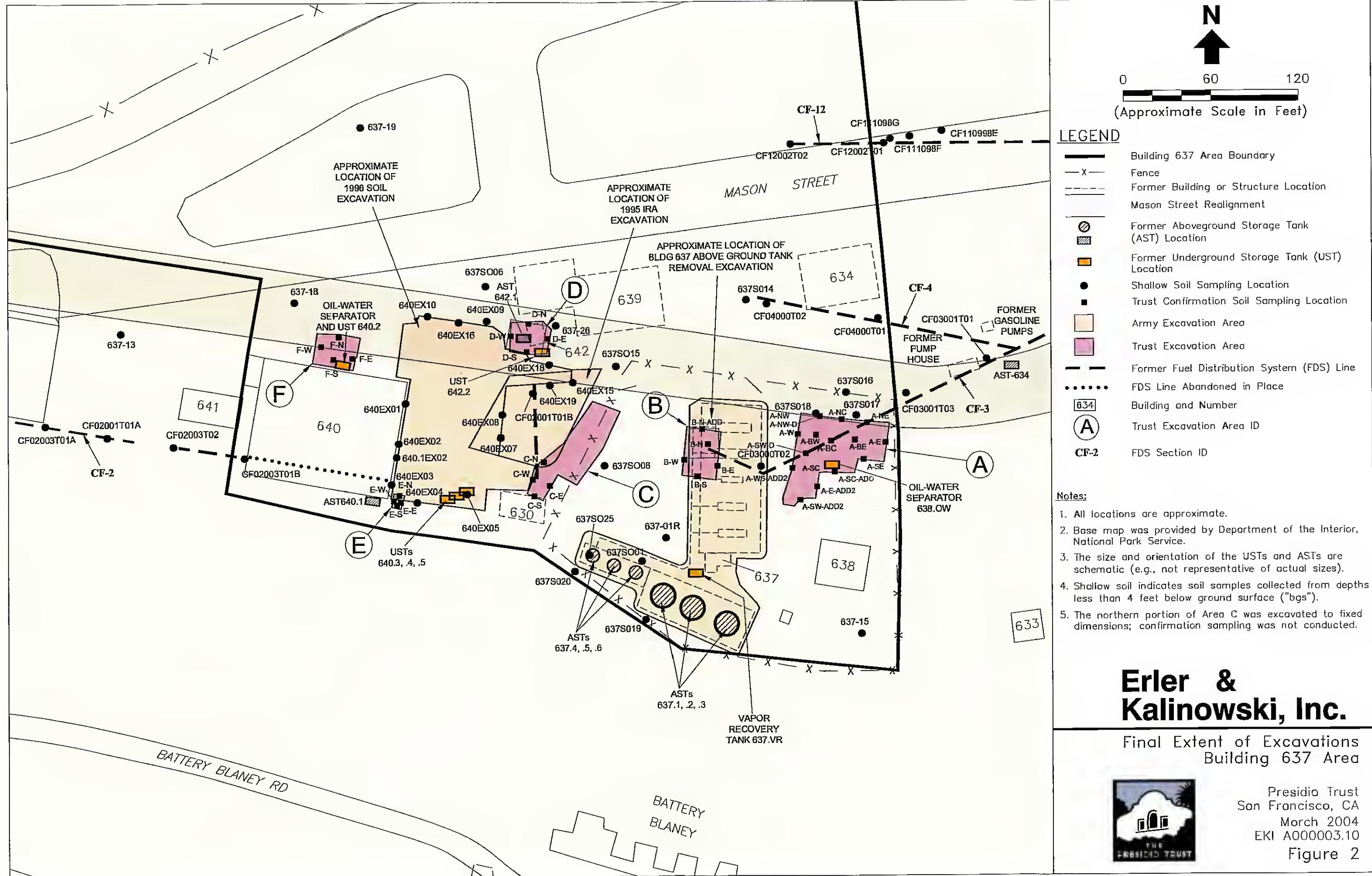
Erler & Kalinowski, Inc.

Site Location Map



Presidio Trust
San Francisco, CA
March 2004
EKI A000003.10

Figure 1



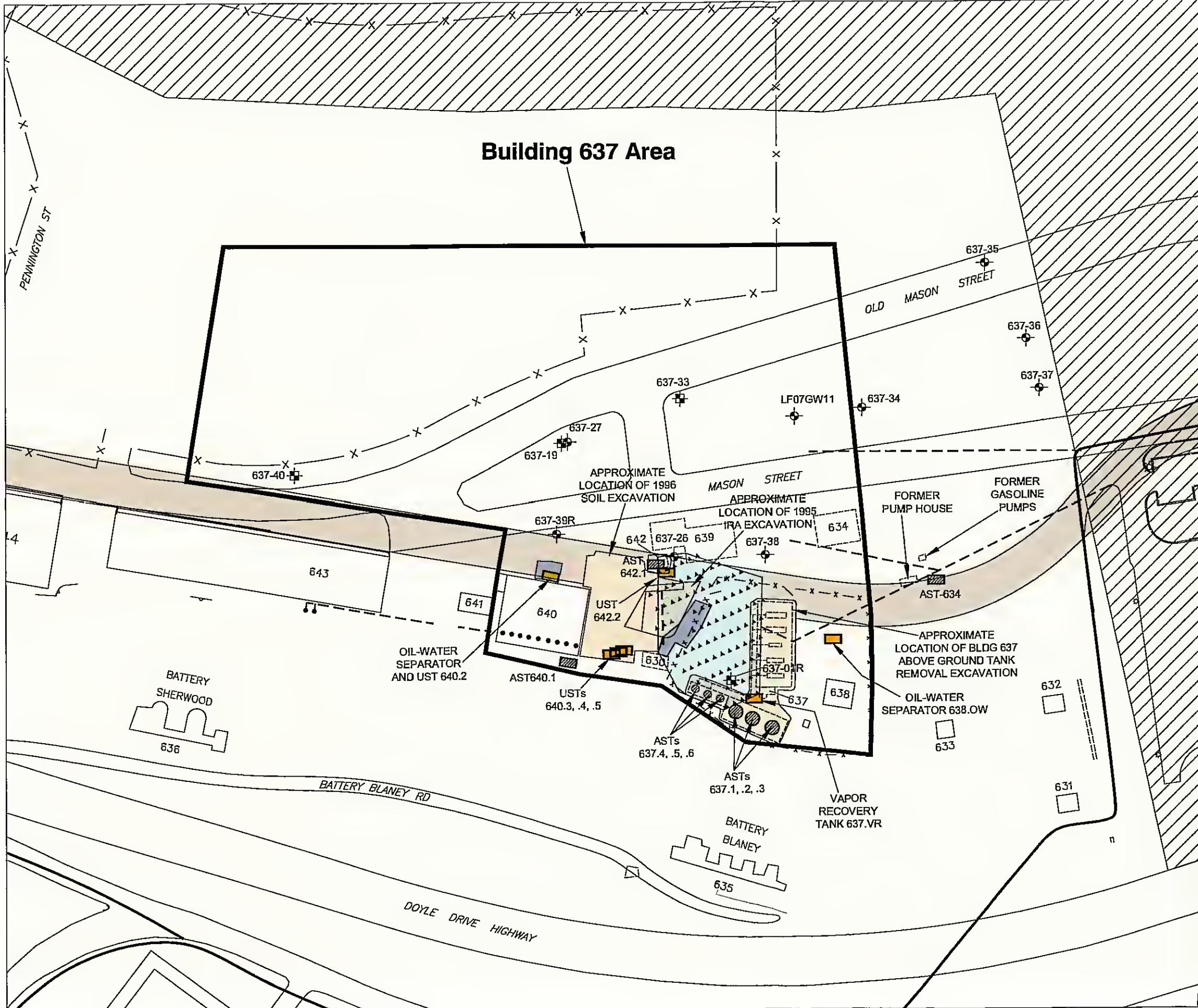
Erler & Kalinowski, Inc.

Final Extent of Excavations
Building 637 Area



Presidio Trust
Son Francisco, CA
March 2004
EKI A000003.10

Figure 2



N

0 120 240
(Approximate Scale in Feet)

LEGEND

- x— Fence
- Former Building or Structure Location
- Mason Street Realignment
- A1 Zone Monitoring Well
- A2 Zone Monitoring Well
- ▨ Saltwater Ecological Protection Zone
- Former Aboveground Storage Tank (AST) Location
- Former Underground Storage Tank (UST) Location
- ▨ Former Excavation Area
- FDS Line
- FDS Line Abandoned in Place
- 634 Building and Number
- Location Where ORC was Placed
- Excavation Backfill (4 to 6 feet bgs)
- Approximate ORC Injection Area ("—" Represents Approximate ORC Injection Point)

Erler & Kalinowski, Inc.

ORC Treatment Areas and
Monitoring Well Network
Building 637 Area

Presidio Trust
San Francisco, CA
March 2004
EKI A000003.10



Figure 3

APPENDIX B

**GROUNDWATER MONITORING RESULTS
FOR THE BUILDING 637 AREA**

TABLE B
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS FOR
BUILDING 637 AREA, THIRD AND FOURTH QUARTERS, 2004

Presidio of San Francisco, California

| Well Name | Sample Date | Concentration ($\mu\text{g/L}$) | | | | | |
|-----------|-------------|-----------------------------------|------|---------|---------|--------------|---------|
| | | TPH | VOCs | Xylenes | | | |
| | | TPH as Gasoline | | Benzene | Toluene | Ethylbenzene | Xylenes |
| | | | | | | | |
| 637-34 | 8/13/2003 | <50.0 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 637-35 | 8/13/2003 | <50.0 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 637-36 | 8/13/2003 | <50.0 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| 637-37 | 8/13/2003 | <50.0 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |

Abbreviations:

<0.50
 $\mu\text{g/L}$
 Micrograms per liter

Notes:

(a) Data in this table will be published in the *Semi-Annual Groundwater Monitoring Report, Third and Fourth Quarters 2003, Presidio-Wide Quarterly Groundwater Monitoring Program.*

Table A-5-3
Results of General Chemistry Analyses
Building 637 Area
Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Alkalinity Total | Bicarbonate | Chloride | Dissolved Oxygen | Fluoride | N as Nitrate ² | N as Nitrite | N as Nitrate + Nitrite | Sulfate |
|--------------------------------------|----------------|---------------------|-------------|------------------------------|------------------------------|-------------------|------------------------------|-------------------|---------------------------|-------------------|
| Analytical Method ¹ | E310.1 | E300.0/ SW9056 | Field | E300.0/ E340.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ SW9056 | E300.0/ E353.2 | E300.0/ SW9056 | E300.0/ SW9056 | E300.0/ SW9056 |
| 637-01R (A2 Zone) | 12/03/02 | 450 | 450 | 110 | 1 | 0.25 | < 0.05 | < 0.05 | NA | 47 |
| DUP0829022B | 08/29/02 | 490 | 490 | 110 | 0.8 | 0.25 | < 0.25 | < 0.25 | NA | 33 |
| | 08/29/02 | 470 | 470 | 100 | — | 0.33 | < 0.25 | < 0.25 | NA | 38 |
| | 05/29/02 | 470 | 470 | 110 | 0.8 | 0.38 | 0.08 | < 0.05 | NA | 62 |
| DUP0305023B | 03/05/02 | 550 | 550 | 110 | 0.8 | 0.44 | < 0.05 | < 0.05 | NA | 34 |
| | 03/05/02 | 520 | 520 | 110 | — | 0.46 | < 0.05 | < 0.05 | NA | 38 |
| DUP1203012A | 12/03/01 | 500 | 500 | 140 | 1.4 | 0.3 | 0.02 J,J | < 0.05 UJ | NA | 26 |
| 637-01RCL | 12/03/01 | 500 | 500 | 140 | — | 0.3 | 0.03 J,J | < 0.05 UJ | NA | 24 |
| | 08/28/01 | 500 | 500 | 120 | 1 | 0.3 | 0.16 | 0.05 | NA | 24 |
| | 05/15/01 | 480 | 480 | 110 | 2.4 | 0.25 | 1.7 J- | < 0.05 UJ | NA | 34 |
| | 06/26/00 | NA | NA | NA | 1.01 | NA | NA | NA | NA | NA |
| | 05/06/99 | NA | NA | NA | 0.21 | NA | NA | NA | NA | NA |
| | 02/04/99 | 445 | 445 | 276 | 0.15 | NA | < 0.2 | NA | NA | 19 |
| | 11/04/98 | 445 | 445 | 263 | 0.98 | NA | < 0.2 | NA | NA | 91.9 |
| | 08/03/98 | 440 | 440 | 130 | 0.34 | NA | < 2 | NA | NA | 77.8 |
| | 05/07/98 | 404 | 404 | 103 | 0.41 | NA | 0.041 | NA | NA | 39 |
| | 02/09/98 | 446 | 446 | 98 | 0.15 | NA | 0.031 | NA | NA | 68.8 |
| | 10/13/97 | 468 | 468 | 236 | 0.60 | NA | 0.066 (33) | NA | NA | 70 |
| | 07/17/97 | 490 | 490 | 161 | 0.21 | NA | 0.041 | NA | NA | 83.9 |
| | 04/09/97 | 490 | 490 | 107 | 0.42 | NA | 0.056 | NA | NA | 52.7 |
| | 01/23/97 | 519 | 519 | 141 | 0.15 | NA | 0.03 | NA | NA | 72.4 |
| | | | | | | | | | | 56.7 |

Table A-5-3
Results of General Chemistry Analyses
Building 637 Area
Presidio of San Francisco, California

| Well Name (water-heating zone) | Sample Date | Alkalinity Total | Bicarbonate | Chloride | Dissolved Oxygen | Fluoride | N as Nitrate ² | N as Nitrite | N as Nitrate + Nitrite | Sulfate |
|--------------------------------------|----------------|---------------------|-------------------|----------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| Analytical Method ¹ | E310.1 | E310.1 | E300.0/ SW9056 | Field | E300.0/ E340.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 |
| | | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) |
| 637-19 (A2 Zone) | 12/03/02 | 290 | 290 | 110 | 0.1 | 0.23 | < 0.05 | < 0.05 | NA | 84 |
| | 09/03/02 | 310 | 310 | 120 | 0.6 | 0.39 | < 0.05 | < 0.05 | NA | 84 |
| | 06/03/02 | 350 | 350 | 120 | 0.6 | 0.3 | < 0.05 | < 0.05 | NA | 92 |
| | 03/05/02 | 330 | 330 | 100 | 0.8 | 0.35 | < 0.05 | < 0.05 | NA | 98 |
| | 11/27/01 | 280 | 280 | 120 | 0.5 | 0.43 | < 0.05 UJ | < 0.05 UJ | NA | 110 |
| | 08/28/01 | 340 | 340 | 120 | 3.5 | 0.34 | < 0.05 | < 0.05 | NA | 99 |
| | 05/17/01 | 340 | 340 | 120 | 3.9 | 0.4 | < 0.05 | < 0.05 | NA | 99 |
| | 05/03/99 | NA | NA | NA | 0.14 | NA | NA | NA | NA | NA |
| | 02/01/99 | 352 | 352 | 130 | 0.28 | NA | < 0.2 | NA | NA | 89 |
| | 10/29/98 | 282 | 282 | 119 | 0.60 | NA | 0.06 | NA | NA | 90 |
| | 07/30/98 | 300 | 300 | 87 | 0.18 | NA | 1.6 | NA | NA | 78 |
| | 05/11/98 | 380 | 380 | 139 | 7.56 (J35) | NA | 0.184 | NA | NA | 75.4 |
| | 02/05/98 | 334 | 334 | 137 | 0.60 | NA | 0.118 (I29) | NA | NA | 104 |
| | 10/09/97 | 332 | 332 | 112 | 0.01 | NA | 0.17 | NA | NA | 108 |
| | 07/15/97 | 327 | 327 | 117 | 0.50 | NA | 0.152 | NA | 0.097 | 91.8 |
| | 04/08/97 | 376 | 376 | 135 | 0.21 | NA | 0.021 | NA | NA | 72.3 |
| | 01/22/97 | 302 | 302 | 133 | 0.41 | NA | 0.27 | NA | 0.36 | 79.4 |
| 637-26 | 12/05/02 | 890 | 890 | 95 | 0.08 | 0.18 | < 0.05 | < 0.05 | NA | 36 |
| DUP1205021A (A1 Zone) | 12/05/02 | 910 | 910 | 95 | — | 0.22 | < 0.05 | < 0.05 | NA | 36 |
| | 08/29/02 | 810 | 810 | 92 | 0.12 | 0.28 | < 0.25 | < 0.25 | NA | 39 |
| | 05/29/02 | 640 | 640 | 110 | 0.3 | 0.31 | < 0.05 | < 0.05 | NA | 15 |
| | 03/11/02 | 350 | 350 | 69 | 0.13 | 0.2 | < 0.05 | < 0.05 | NA | 61 |
| | 12/03/01 | 760 | 760 | 110 | 0.17 | 0.38 | < 0.05 UJ | < 0.05 UJ | NA | 4.2 |
| | 08/29/01 | 700 | 700 | 120 | 0.26 | 0.32 | < 0.05 | < 0.05 | NA | 15 |
| | 05/14/01 | 500 | 500 | 95 | 0.28 | 0.25 | < 0.05 | < 0.05 | NA | 67 |

Table A-5-3
Results of General Chemistry Analyses
Building 637 Area
Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Alkalinity Total | Bicarbonate | Chloride | Dissolved Oxygen | Fluoride | N as Nitrate ² | N as Nitrate + Nitrite | Sulfate |
|--------------------------------------|----------------|---------------------|-------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|-------------------|
| Analytical Method ¹ | E310.1 | E300.0/ SW9056 | Field | E300.0/ E340.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ SW9056 |
| | | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) |
| 637-26 (A1 Zone) | 06/26/00 | NA | NA | NA | 1.71 | NA | NA | NA | NA |
| | 04/28/99 | NA | NA | NA | 0.17 | NA | NA | NA | NA |
| | 01/28/99 | 402 | 402 | 100 | 0.20 | NA | < 0.2 | NA | NA |
| | 10/28/98 | 762 | 762 | 330 | 0.70 | NA | < 0.4 | NA | 37.1 |
| | 07/29/98 | 570 | 570 | 79 | 0.39 | NA | < 0.8 | NA | < 5 |
| | 05/06/98 | 646 | 646 | 109 | 0.16 | NA | 0.167 | NA | 19 |
| | 02/10/98 | 410 | 410 | 89 | 0.74 | NA | 0.247 | NA | 19.5 |
| | 10/14/97 | 658 | 658 | 176 | 0.41 | NA | 0.043 | NA | 123 |
| | 07/17/97 | 593 | 593 | 170 | 0.10 | NA | < 0.01 | NA | 0.602 |
| | 04/10/97 | 500 | 500 | 97 | 0.14 | NA | < 0.01 | NA | 0.392 |
| | 01/24/97 | 437 | 437 | 105 | 0.36 | NA | < 0.01 | NA | 62.1 |
| 637-27 (A1 Zone) | 12/05/02 | 520 | 520 | 130 | 0.12 | 0.27 | < 0.05 | < 0.05 | 62 |
| | 08/29/02 | 410 | 410 | 95 | 0.18 | 0.42 | < 0.25 | < 0.25 | 330 |
| | 05/29/02 | 400 | 400 | 150 | 0.24 | 0.46 | < 0.1 | < 0.1 | 360 |
| | 03/11/02 | 130 | 130 | 35 | 2.56 | 0.46 | 0.08 | < 0.05 | 670 |
| | 11/27/01 | 130 | 130 | 160 | 1.1 | 0.43 | 0.04 J | < 0.05 | 140 |
| | 08/29/01 | 330 | 330 | 120 | 0.39 | 0.5 | 0.04 J | < 0.05 | 650 |
| | 05/14/01 | 390 | 390 | 220 | 0.28 | 0.27 | < 0.05 | < 0.05 | 440 |
| | 05/03/99 | NA | NA | NA | 1.62 | NA | NA | NA | 840 |
| | 02/01/99 | 295 | 295 | 74.1 | 0.89 | NA | 0.072 | NA | NA |
| | 10/29/98 | 711 | 711 | 311 | 0.56 | NA | < 0.2 | NA | 78 |
| | 07/30/98 | 550 | 550 | 170 | 0.20 | NA | < 2 | NA | 16 |
| | 05/11/98 | 520 | 520 | 184 | 0.90 | NA | 0.159 | NA | 56 |
| | 02/05/98 | 582 | 582 | 269 | 2.57 (J35) | NA | 0.141 (J29) | NA | 34.4 |
| | | | | | | | | | 23.4 |

Table A-5-3
Results of General Chemistry Analyses
Building 637 Area
Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Alkalinity Total | Bicarbonate | Chloride | Dissolved Oxygen | Fluoride | N as Nitrate ² | N as Nitrite | N as Nitrate + Nitrite | Sulfate |
|--------------------------------------|----------------|---------------------|-------------------|----------|------------------------------|------------------------------|------------------------------|------------------------------|---------------------------|-------------------|
| Analytical Method ¹ | E310.1 | E310.1 | E300.0/ SW9056 | Field | E300.0/ E340.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E353.2 | E300.0/ SW9056 |
| | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) |
| 637-27 (A1 Zone) | 10/09/97 | 613 | 613 | 212 | 0.71 | NA | 0.01 | NA | NA | 19.2 |
| | 07/15/97 | 505 | 505 | 120 | 0.62 | NA | NA | NA | 0.08 | 53.3 |
| | 04/08/97 | 610 | 610 | 342 | 0.67 | NA | 0.286 | NA | NA | 73 |
| | 01/22/97 | 617 | 617 | 677 | 0.45 | NA | 0.29 | NA | 0.35 | 169 |
| | 12/03/02 | 260 | 260 | 290 | 0.2 | 0.18 | <0.05 | NA | NA | 120 |
| | 09/03/02 | 270 | 270 | 320 | 0.6 | 0.34 | <0.05 | <0.05 | NA | 120 |
| 637-33 (A2 Zone) | 06/03/02 | 290 | 290 | 320 | 0.3 | 0.23 | <0.05 | <0.05 | NA | 110 |
| | 03/05/02 | 280 | 280 | 310 | 1.1 | 0.26 | <0.05 | <0.05 | NA | 120 |
| | 11/27/01 | 280 | 280 | 260 | 0.5 | 0.37 | <0.05 | UJ | <0.05 UJ | 120 |
| | 08/28/01 | 270 | 270 | 280 | 3.9 | 0.27 | <0.05 | <0.05 | NA | 110 |
| | 08/28/01 | 270 | 270 | 300 | -- | 0.25 | <0.05 | <0.05 | NA | 110 |
| | 05/17/01 | 310 | 310 | 240 | 3.41 | 0.33 | <0.05 | <0.05 | NA | 96 |
| DUP0828013A | 05/17/01 | 310 | 310 | 240 | -- | 0.27 | <0.05 | <0.05 | NA | 99 |
| | 05/04/99 | NA | NA | NA | 0.31 | NA | NA | NA | NA | NA |
| | 02/02/99 | 290 | 290 | 300 | 0.20 | NA | <0.4 | NA | NA | 114 |
| | 11/02/98 | 317 | 317 | 228 | 0.36 | NA | <0.2 | NA | NA | 119 |
| | 08/03/98 | 290 | 290 | 249 | 0.39 | NA | <3.2 | NA | NA | 98 |
| | 05/07/98 | 288 | 288 | 270 | 0.46 | NA | 0.018 | NA | NA | 107 |
| DUP0517013A | 03/05/98 | 280 | 280 | 254 | 0.19 | NA | 0.013 | NA | NA | 113 |
| | 03/11/03 | 470 | 470 | 150 | 1.0 | 0.33 | <0.05 | <0.05 | NA | 450 |
| | 12/03/02 | 560 | 560 | 86 | 0.2 | 0.32 | <0.05 | <0.05 | NA | 120 |
| | 09/03/02 | 470 | 470 | 70 | 0.4 | 0.56 | <0.05 | <0.05 | NA | 170 |
| | 06/03/02 | 510 | 510 | 130 | 0.2 | 0.42 | <0.05 | <0.05 | NA | 450 |
| | 03/05/02 | 520 | 520 | 140 | 0.5 | 0.36 | <0.05 | <0.05 | NA | 400 |

Table A-5-3
Results of General Chemistry Analyses
Building 637 Area
Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Alkalinity Total | Bicarbonate | Chloride | Dissolved Oxygen | Fluoride | N as Nitrate ² | N as Nitrite | N as Nitrate + Nitrite | Sulfate |
|--------------------------------------|----------------|---------------------|-------------------|----------|------------------------------|------------------------------|------------------------------|-----------------|---------------------------|---------|
| Analytical Method ¹ | E310.1 | E310.1 | E300.0/ SW9056 | Field | E300.0/ E340.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E353.2 | E300.0/ SW9056 | |
| DUP0828013B (A1 Zone) | 11/27/01 | 410 | 410 | 110 | 0.5 | 0.32 | <0.05 | <0.05 | NA | 290 |
| | 08/28/01 | 480 | 480 | 120 | 3.4 | 0.36 | <0.05 | <0.05 | NA | 610 |
| | 08/28/01 | 460 | 460 | 120 | — | 0.34 | <0.05 | <0.05 | NA | 610 |
| | 05/17/01 | 480 | 480 | 240 | 3.49 | 0.46 | <0.05 | <0.05 | NA | 1000 |
| | 06/23/00 | NA | NA | NA | 1.31 | NA | NA | NA | NA | NA |
| | 03/11/03 | 800 | 800 | 730 | 1.0 | <0.2 | <0.1 | <0.1 | NA | 1200 |
| | 12/03/02 | 750 | 750 | 720 | 0.4 | <0.5 | <0.25 | <0.25 | NA | 1300 |
| | 09/03/02 | 850 | 850 | 900 | 0.3 | 0.24 | <0.05 | <0.05 | NA | 980 |
| | 06/03/02 | 800 | 800 | 720 | 0.3 | 0.13 | 0.12 | <0.1 | NA | 1,200 |
| | 03/05/02 | 730 | 730 | 810 | 0.6 | 0.28 | <0.05 | <0.05 | NA | 1,300 |
| 637-35 (A1 Zone) | 11/27/01 | 660 | 660 | 620 | 2.2 | 0.38 | <0.1 | <0.1 | NA | 1,400 |
| | 08/28/01 | 740 | 740 | 870 | 4 | 0.14 | <0.05 | <5 | NA | 1,300 |
| | 05/17/01 | 770 | 770 | 650 | 1.99 | 0.19 | <0.05 | <0.05 | NA | 1,900 |
| | 06/23/00 | NA | NA | NA | 2.18 | NA | NA | NA | NA | NA |
| | 06/04/03 | 790 | 790 | 330 | 0.5 | <0.5 | <0.25 | <0.25 | NA | 1,600 |
| | 03/11/03 | 720 | 720 | 260 | 1.0 | <0.2 | <0.1 | <0.1 | NA | 1300 |
| | 12/03/02 | 670 | 670 | 240 | 0.3 | <0.2 | <0.1 | <0.1 | NA | 1,300 |
| | 09/03/02 | 750 | 750 | 420 | 0.4 | 0.29 | <0.1 | <0.1 | NA | 1,400 |
| | 06/03/02 | 780 | 780 | 600 | 0.3 | <0.5 | <0.25 | <0.25 | NA | 1,600 |
| | 03/05/02 | 730 | 730 | 650 | 0.6 | 0.17 | <0.05 | <0.05 | NA | 1,400 |
| 637-36 (A1 Zone) | 11/27/01 | 610 | 610 | 190 | 1.5 | 0.26 | <0.1 | <0.1 | NA | 720 |
| | 08/29/01 | 600 | 600 | 260 | 1.9 | 0.13 | <0.05 | <0.05 | NA | 910 |
| | 05/17/01 | 700 | 700 | 540 | 3 | 0.34 | <0.05 | <0.05 | NA | 1,100 |

Table A-5-3
Results of General Chemistry Analyses
Building 637 Area
Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Alkalinity Total | Bicarbonate | Chloride | Dissolved Oxygen | Fluoride | N as Nitrate ² | N as Nitrite | N as Nitrate + Nitrite | Sulfate |
|--------------------------------------|----------------|---------------------|-------------------|----------|------------------------------|------------------------------|------------------------------|-----------------|---------------------------|---------|
| Analytical Method ¹ | E310.1 | E310.I | E300.0/ SW9056 | Field | E300.0/ E340.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E353.2 | E300.0/ SW9056 | |
| 637-37 (A1 Zone) | 03/11/03 | 730 | 730 | 120 | 1.0 | 0.19 | < 0.05 | < 0.05 | NA | 150 |
| | 12/03/02 | 530 | 530 | 75 | 0.8 | 0.19 | < 0.05 | < 0.05 | NA | 55 |
| | 09/03/02 | 700 | 700 | 83 | 0.4 | 0.28 | < 0.05 | < 0.05 | NA | 130 |
| | 06/03/02 | 660 | 660 | 100 | 0.2 | 0.31 | < 0.05 | < 0.05 | NA | 110 |
| | 05/17/01 | 390 | 390 | 99 | 2.7 | 0.24 | < 0.05 | < 0.05 | NA | 670 |
| | 06/23/00 | NA | NA | NA | 7.08 | NA | NA | NA | NA | NA |
| 637-38 (A1 Zone) | 03/11/03 | 300 | 300 | 30 | 0.6 | 0.27 | < 0.05 | < 0.05 | NA | 15 |
| DUP0311033B | 03/11/03 | 220 | 220 | 29 | NA | 0.28 | < 0.05 | < 0.05 | NA | 16 |
| 637-38CL | 03/11/03 | 220 | 220 | 36 | NA | 0.35 J- | < 0.1 | < 0.05 UJ | < 0.05 | 15 |
| DUP1209022B | 12/09/02 | 450 | 450 | 110 | 0.8 | 0.22 | < 0.05 | < 0.05 | NA | 51 |
| 637-38CL | 12/09/02 | 450 | 450 | 110 | -- | 0.21 | < 0.05 | < 0.05 | NA | 50 |
| | 12/09/02 | 440 | 440 | 110 | -- | 0.29 | < 0.1 UJ | < 0.05 UJ | < 0.05 UJ | 51 |
| | 08/29/02 | 580 | 580 | 100 | 0.9 | 0.24 | < 0.25 | < 0.25 | NA | 2 |
| | 05/29/02 | 540 | 540 | 82 | 0.5 | 0.28 | < 0.05 | < 0.05 | NA | 3.7 |
| DUP0529022A | 05/29/02 | 540 | 540 | 82 | -- | 0.25 | < 0.05 | < 0.05 | NA | 4.1 |
| 637-38CL | 05/29/02 | 540 | 540 | 78 | -- | < 1 | < 1 | < 1 | NA | 4 |
| | 03/05/02 | 130 | 130 | 20 | 0.6 | 0.32 | < 0.05 | < 0.05 | NA | 41 |
| | 12/03/01 | 98 | 98 | 11 | 1.2 | 0.65 | < 0.05 UJ | < 0.05 UJ | NA | 9.9 |
| | 08/28/01 | 560 | 560 | 87 | 1 | 0.33 | < 0.05 | < 0.05 | NA | 0.83 |
| | 05/15/01 | 200 | 200 | 25 | 1.2 | 0.43 | < 0.05 UJ | < 0.05 UJ | NA | 14 |
| | 06/23/00 | NA | NA | NA | 2.39 | NA | NA | NA | NA | NA |

Table A-5-3
Results of General Chemistry Analyses
Building 637 Area
Presidio of San Francisco, California

Table A-5-3
Results of General Chemistry Analyses
Building 637 Area
Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Alkalinity Total | Bicarbonate | Chloride | Dissolved Oxygen | Fluoride | N as Nitrate ² | N as Nitrite | N as Nitrate + Nitrite | Sulfate | |
|--------------------------------------|--|--|--|---|---|--|---|---|---|---|---|
| Analytical Method ¹ | E310.1 | E310.1 | E300.0/ SW9056 | Field | E300.0/ E340.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ SW9056 | |
| | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | (mg/L) | |
| LF07/GW11 (A1 Zone) | 05/17/01 02/11/00 07/07/00 04/29/99 02/01/99 10/29/98 07/30/98 05/11/98 02/10/98 10/14/97 07/17/97 04/10/97 01/23/97 10/17/96 07/24/96 05/08/96 | 510 NA NA NA NA 553 490 384 442 495 477 590 570 520 592 534 | 510 NA NA NA NA 553 490 384 442 495 477 590 570 520 592 534 | 120 NA NA NA NA 87 NA 44 70 70 81 84 75 82 90 89 | 2.52 0.72 12.8 0.19 0.23 87 67 44 58 0.74 0.28 0.24 0.69 0.13 0.06 0.1 | 0.5 NA NA NA NA 0.44 0.23 0.09 0.74 0.74 0.28 0.24 0.69 0.509 0.83 0.53 | <0.05 NA NA NA NA NA NA NA NA NA NA NA NA NA NA NA | <0.05 NA NA NA NA NA NA NA NA NA NA NA NA NA NA NA | <0.05 NA NA NA NA NA NA NA NA NA NA NA NA NA NA NA | <0.05 NA NA NA NA NA NA NA NA NA NA NA NA NA NA NA | 870 NA NA NA NA NA NA NA NA NA NA NA NA NA NA NA |

Table A-5-3
Results of General Chemistry Analyses
Building 637 Area
Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Alkalinity Total | Bicarbonate | Chloride | Dissolved Oxygen | Fluoride | N as Nitrate ² | N as Nitrite | N as Nitrate + Nitrite | Sulfate |
|--------------------------------------|----------------------|---------------------|-------------------|----------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| Analytical Method ¹ | E310.1 | E310.1 | E300.0/ SW9056 | Field | E300.0/ E340.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 | E300.0/ E353.2/ SW9056 |
| LF07/GW11 (A1 Zone) | 02/22/96 11/16/95 | 501 514 | 501 514 | 60 99 | 0.5 NM | 0.27 0.48 | NA NA | NA NA | 0.19 0.05 | 5.4 1.5 |

Notes

1 - The identified analytical method(s) are for analyses performed beginning in the Second Quarter 2001. The analytical methods used during previous quarters are identified in the respective quarterly reports.

2 - N as nitrite analyzed prior to 05/17/01 includes N as nitrate analysis.

mg/L - milligrams per liter

NA - not analyzed

NM - not measured

"—" dissolved oxygen measurements were not taken for duplicate and quality control samples.
 "CCL" suffix denotes a quality control duplicate sample was sent to the control laboratory.

Table 7 in the main report identifies all duplicate and split samples and associates them with the well from which they were collected.
 Table 11 in the main report identifies current and historic data qualifiers.

Table A-5-4
Results of TPH, BTEX, and MTBE Analyses
Building G37 Area
Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE | 'TPH as Gasoline (Carbon Range C7-C12)' | 'TPH as Diesel (Carbon Range C12-C24)' | 'TPH as Fuel Oil' (Carbon Range C24-C36) |
|--------------------------------------|----------------|---------------------|---------------------|---------------------|---------------------|---------------------|---|--|--|
| | | | | | | | | | |
| Cleanup Level | | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) |
| 637-01R (A2 Zone) | 12/03/02 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | NA |
| DUP0829022B | 08/29/02 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | 89 | NA |
| DUP0305023B | 05/29/02 | <0.5 | <0.5 | <0.5 | <0.5 | 0.9 | <2 | 100 | NA |
| DUP1203012A | 03/05/02 | <0.5 | <0.5 | <0.5 | <0.5 | 0.53 | <2 | <50 | NA |
| 637-01RCL | 12/03/01 | <0.5 | <0.5 | <0.5 | <0.5 | 0.53 | 7 | 130 | NA |
| | 12/03/01 | <0.5 | <0.5 | <0.5 | <0.5 | 0.65 | <2 | 150 | NA |
| | 12/03/01 | <0.5 | <0.5 | <0.5 | <0.5 | 0.72 | <2 | 150 | NA |
| | 08/28/01 | <0.5 | <0.5 | <0.5 | <0.5 | 0.73 | 13 C | 190 | NA |
| | 05/15/01 | <0.5 | <0.5 | <0.5 | <0.5 | 0.78 | 2.8 | 170 | NA |
| | 06/26/00 | <0.5 | <0.5 | <0.5 | <0.5 | <1 | NA | 55 | NA |
| | 05/06/99 | 0.91 | <0.5 | <0.5 | <0.5 | NA | 130 (J25) | <50 | <300 |
| | 02/04/99 | <0.5 | <0.5 | <0.5 | <0.5 | NA | <50 | <50 | <300 |
| | 11/04/98 | <0.5 | <0.5 | <0.5 | <0.5 | NA | 130 (J25) | <50 | <300 |
| | 08/03/98 | 3 (J18) | <0.5 (J18) | <0.5 (J18) | 0.71 (J18) | NA | 240 (J18, J25) | <50 | <300 |
| | 05/07/98 | 5.5 | <0.5 | <0.5 | <0.5 | NA | 63 (J25) | <50 | <300 |
| | 02/09/98 | 0.93 | <0.5 | <0.5 | <0.5 | 0.58 | NA | 88 (J25) | <50 |
| | 10/13/97 | <0.5 | <0.5 | <0.5 | <0.5 | 0.85 | NA | 160 (J25) | <50 |
| | 07/17/97 | 5.6 (J5) | <0.5 | <0.5 | <0.5 | 1.6 (J5) | NA | 330 (J25) | <50 |
| | 04/09/97 | 0.41 (J5, J28) | <0.5 | <0.5 | <0.5 | 0.69 (J5) | NA | 160 (J25) | <50 |
| | 01/23/97 | 7.1 (J5) | <0.5 | <0.5 | <0.5 | 1.9 (J5) | NA | 240 (J25) | <50 |
| | 10/23/96 | 74 | 1.2 | <0.5 | 2.3 | NA | 300 (J25) | <50 | <300 (J12) |

Table A-5-4
 Results of TPH, BTEX, and MTBE Analyses
 Building 637, Area
 Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Benzene | Toluene | EthyBenzene | Total Xylenes | MTBE | TPH as Gasoline (Carbon Range C7-C12) | | TPH as Diesel (Carbon Range C12-C24) | | TPH as Fuel Oil ² (Carbon Range C24-C36) |
|--------------------------------------|----------------|-------------|-------------|-------------|------------------|------|---|---|--|---------------------|---|
| | | | | | | | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8015B/ SW8015M | SW8015B/ SW8015M | |
| Cleanup Level | 650 | 2,100 | 1,000 | 232,000 | — | — | 13,000 | 15,000 | 21,000 | — | |
| 637-01R (A2 Zone) | 07/29/96 | 10 | < 0.5 | < 0.5 | 0.72 | NA | 96 (J25) | < 50 | < 50 | < 300 | |
| | 05/15/96 | 4.5 | < 0.5 | < 0.5 | 1.3 | < 5 | 150 (J25) | < 50 | < 50 | < 300 | |
| | 02/29/96 | 48 | 0.78 | < 0.5 | 5.1 | NA | 160 (J25) | < 50 | < 50 | < 300 | |
| | 12/08/95 | 35 | < 0.78 (U2) | < 0.5 | 4.8 | NA | 390 (J25) | < 50 | < 50 | < 300 | |
| | 08/28/95 | 990 | < 50 | < 50 | < 50 | NA | 4,900 (J25) | 87 (J25) | 87 (J25) | < 300 | |
| | 05/19/95 | 1,100 | < 100 | < 100 | < 100 | NA | 4,400 (J25) | 250 (J25) | 250 (J25) | NA | |
| | 02/23/95 | 1,300 | < 50 | < 50 | < 50 | NA | 840 (J25) | 180 (J25) | 180 (J25) | NA | |
| | 12/07/94 | < 5 | < 5 | < 5 | < 5 | NA | < 50 | 75 (J25) | 75 (J25) | NA | |
| | 08/30/94 | 480 | < 25 | < 25 | < 25 | NA | 280 (J25) | 140 (J25) | 140 (J25) | NA | |
| | 05/24/94 | 1,100 | < 50 | < 50 | < 50 | NA | 500 (J25) | 98 (J25) | 98 (J25) | NA | |
| | 02/11/94 | 390 | < 5 | < 5 | 8.8 | NA | 470 (J25) | 210 (J25) | 210 (J25) | NA | |
| 637-19 (A2 Zone) | 12/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA | NA | |
| | 09/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | 2.7 | < 50 | NA | NA | NA | |
| | 06/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | 2.4 | < 50 | NA | NA | NA | |
| | 03/05/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA | NA | |
| | 11/27/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA | NA | |
| | 08/28/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA | NA | |
| | 05/17/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA | NA | |
| | 05/03/99 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 50 | 52 | 52 | NA | |
| | 02/01/99 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 50 | < 50 (U12) | NA | NA | |
| | 10/29/98 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 50 | < 50 | NA | NA | |
| | 07/30/98 | < 0.5 (U18) | < 0.5 (U18) | < 0.5 (U18) | < 0.5 (U18) | NA | < 50 (U18) | 61 | 61 | NA | |

Table A-5-4
 Results of TPH, BTTEX, and MTBE Analyses
 Building 637 Area
 Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE | TPH as Gasoline (Carbon Range C7-C12) | TPH as Diesel (Carbon Range C12-C24) | TPH as Fuel Oil ² (Carbon Range C24-C36) |
|--------------------------------------|----------------|---|---|---|---|---|---|--|---|
| | | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8015B/ SW8015M | SW8015B/ SW8015M | SW8015B/ SW8015M |
| Cleanup Level | 650 | 2,100 | 1,000 | 232,000 | — | — | 13,000 | 15,000 | 21,000 |
| 637-19 (A2 Zone) | 05/11/98 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | 150 | 270 | NA |
| | 02/05/98 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 50 | 480 | NA |
| | 10/09/97 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 50 | 76 (R32) | < 300 |
| | 07/15/97 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 50 | < 50 | < 300 |
| | 04/08/97 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 50 | < 50 | 310 |
| | 01/22/97 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 50 | < 50 | < 300 |
| | 10/22/96 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 50 | < 50 | < 300 |
| | 07/26/96 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 50 | < 50 | < 300 |
| | 05/14/96 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 5 | < 50 | < 300 |
| | 02/27/96 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 50 | < 50 | 310 (J25, J32) |
| | 12/07/95 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 50 | < 50 | < 300 |
| | 08/25/95 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 50 | < 50 | < 300 |
| | 05/18/95 | < 5 | < 5 | < 5 | < 5 | NA | < 50 | 480 (J25) | NA |
| | 02/22/95 | < 5 | < 5 | < 5 | < 5 | NA | 150 (J25) | 270 (J25) | NA |
| | 11/30/94 | < 5 | < 5 | < 5 | < 5 | NA | < 50 | 61 (J25) | NA |
| | 08/29/94 | < 5 | < 5 | < 5 | < 5 | NA | < 50 | < 50 | NA |
| | 05/19/94 | 2.2 (J28) | < 5 | < 5 | < 5 | NA | < 50 | 290 (J25) | NA |
| | 02/15/94 | < 5 | < 5 | < 5 | < 5 | NA | < 50 | 52 (J25) | NA |

Table A-5-4
 Results of TPH, BTEX, and MTBE Analyses
 Building 637 Area
 Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Benzene | Toluene | Ethybenzene | Total Xylenes | MTBE | TPH as Gasoline (Carbon Range C7-C12) | TPH as Diesel (Carbon Range C12-C24) | TPH as Fuel Oil (Carbon Range C24-C36) |
|--------------------------------------|----------------|-------------|----------------|-------------|------------------|------------|---|--|--|
| | | | | | | | | | |
| DUP1205021A 637-26 (A1 Zone) | 12/05/02 | < 0.5 | < 0.5 | < 0.5 | 1.9 | 2.3 | 390 Y | NA | NA |
| | 12/05/02 | < 0.5 | < 0.5 | < 0.5 | 1 | < 2 | 360 Y | NA | NA |
| | 08/29/02 | < 0.5 | < 0.5 | < 0.5 | 0.53 | < 2 | 64 | NA | NA |
| | 05/29/02 | < 0.5 | < 0.5 | < 0.5 | 0.53 | < 2 | 64 | NA | NA |
| | 03/11/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 12/03/01 | 1.6 | 5.6 | 2.4 | 4.9 | 2.7 | 620 | NA | NA |
| | 08/29/01 | < 0.5 | 1.6 | 0.57 | 1.58 | 2.8 | 280 | NA | NA |
| | 05/14/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 UJ | 59 | NA | NA |
| | 06/26/00 | < 0.5 | 0.18 (J18) | < 0.5 | 0.29 (128) | NA | 52 | NA | NA |
| | 04/28/99 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | 510 (J25) | 720 (J25) | < 300 |
| | 01/28/99 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | 740 (J25) | 140 (J25) | < 300 |
| | 10/28/98 | < 2.5 | < 2.5 | < 2.5 | NA | 1100 (J25) | 180 (J25) | < 300 | |
| | 07/29/98 | < 0.5 (U18) | 0.66 (J5, J18) | < 0.5 (U18) | 0.62 (J5, J18) | NA | 1100 (J25) | 80 (J25) | < 300 |
| | 05/06/98 | < 0.5 | 1.4 (J5) | < 0.5 | < 0.5 | NA | 2,100 (J5, J25) | 180 (J25) | < 300 |
| | 02/10/98 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | 410 (J25) | < 50 | < 300 |
| | 10/14/97 | < 0.5 | 0.61 | < 0.5 | 0.62 | NA | 2,100 (J25) | 380 (J25) | < 300 |
| | 07/17/97 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | 670 (J5, J25) | 200 (J25) | < 300 |
| | 04/10/97 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | 620 (J25) | 150 (J25) | < 300 |
| | 01/24/97 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | 1,000 (J25) | 100 (J25) | < 300 |

Table A-5-4
Results of TPH, BTEx, and MTBE Analyses
Building 637 Area
Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Benzene | Toluene | Ethybenzene | Total Xylenes | MTBE | TPH as Gasoline | TPH as Diesel | TPH as Fuel Oil ² |
|--------------------------------------|---------------------|---|---|---|---|---|--------------------------|---------------------------|------------------------------|
| | | | | | | | (Carbon Range C7-C12) | (Carbon Range C12-C24) | (Carbon Range C24-C30) |
| Analytical Method ¹ | | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8015B/ SW8015M | SW8015B/ SW8015M | SW8015B/ SW8015M |
| Cleanup Level | | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) |
| 637-26 (AI Zone) | 10/24/96 | 650 | 2,100 | 1,000 | 232,000 | — | 13,000 | 15,000 | 21,000 |
| | 07/30/96 | < 6.2 | < 6.2 | < 6.2 | < 6.2 | NA | 2,400 (J25) | 230 (J25) | < 300 (U12) |
| | 05/16/96 | < 0.5 | 1 (J5) | < 0.5 | < 0.5 | NA | 1,200 (J25) | 590 (J25) | < 300 |
| | 03/01/96 | 52 | < 2.5 | < 2.5 | < 2.5 | < 25 | 1,600 (J25) | 580 (J25) | < 300 |
| | 12/08/95 | 190 | < 5 | < 5 | < 5 | NA | 2,400 (J25) | 180 (J25) | < 300 (U6) |
| | 12/05/02 | 3.3 | < 2.5 | < 2.5 | < 2.5 | NA | 3,700 (J25) | 780 (J25) | < 300 |
| | 637-27 (AI Zone) | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 08/29/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 05/29/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 03/11/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 11/27/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 08/29/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 05/14/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 UJ | < 50 | NA | NA |
| | 05/03/99 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 50 | 130 (J25) | < 300 |
| | 02/01/99 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | < 50 | < 50 (U12) | < 300 |
| | 10/29/98 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | 68 (J25) | < 50 | < 300 |
| | 07/30/98 | 0.23 (J18, J28) | < 0.5 (J18) | < 0.5 (J18) | < 0.5 (J18) | NA | 100 (J25) | < 50 | < 300 |
| | 05/11/98 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | 120 (J, J25) | < 50 | < 300 |
| | 02/05/98 | 0.74 | < 0.5 | < 0.5 | 0.5 | NA | 150 (J25) | < 50 | < 300 |
| | 10/09/97 | 1.4 | < 0.5 | < 0.5 | < 0.5 | NA | 150 (J25) | 120 (R32) | < 300 |
| | 07/15/97 | 0.49 (J5, J28) | < 0.5 | < 0.5 | < 0.5 | NA | 130 (J25) | 66 (J25) | < 300 |
| | 04/08/97 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | 280 (J25) | 66 (J25) | < 300 |
| | 01/22/97 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | 260 (J5, J25) | 110 (J25) | < 300 |

Table A-5-4
Results of TPH, BTEX, and MTBE Analyses
Building 637 Area
Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Benzene | Toluene | Ethybenzene | Total Xylenes | MTBE | TPH as Gasoline (Carbon Range C7-C12) | TPH as Diesel (Carbon Range C12-C24) | TPH as Fuel Oil (Carbon Range C24-C36) |
|--------------------------------------|---|---|---|---|---|---|---|--|--|
| Analytical Method ¹ | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8015B/ SW8015M | SW8015B/ SW8015M | SW8015B/ SW8015M |
| Cleanup Level | 650 | 2,100 | 1,000 | 232,000 | — | — | 13,000 | 15,000 | 21,000 |
| 637-27 (A1 Zone) | 10/23/96 | <2.5 | <2.5 | <2.5 | <2.5 | NA | 1,000 (J25) | 55 (J25) | <300 (U12) |
| | 07/29/96 | <0.5 | <0.5 | <0.5 | 0.54 | NA | 460 (J25) | 86 | <300 |
| | 05/15/96 | <2.5 | <2.5 | <2.5 | <2.5 | <25 | 890 (J25) | 120 (J25) | <300 |
| | 02/29/96 | <0.5 | <0.5 | <0.5 | <0.5 | NA | 530 (J25) | <50 | <300 |
| | 12/08/95 | <0.5 | <0.5 | <0.5 | <0.5 | NA | 540 (J25) | <50 | <300 |
| 637-33 (A2 Zone) | 12/03/02 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | NA | NA |
| | 09/03/02 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | NA | NA |
| | 06/03/02 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | NA | NA |
| | 03/05/02 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | NA | NA |
| | 11/27/01 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | NA | NA |
| | 03/28/01 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | NA | NA |
| DUP0828013A | 08/28/01 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | NA | NA |
| | 05/17/01 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | NA | NA |
| DUP0517013A | 05/17/01 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | NA | NA |
| | 05/04/99 | <0.5 | <0.5 | <0.5 | <0.5 | NA | <50 | <50 (U12) | <300 |
| | 02/02/99 | <0.5 | <0.5 | <0.5 | <0.5 | NA | <50 | <50 | <300 |
| | 11/02/98 | <0.5 | <0.5 | <0.5 | <0.5 | NA | <50 | <50 | <300 |
| | 08/03/98 | <0.5 (U18) | <0.5 (U18) | <0.5 (U18) | <0.5 (U18) | NA | <50 (U18) | <50 | <300 |
| | 05/07/98 | <0.5 | <0.5 | <0.5 | <0.5 | NA | <50 | <50 | <300 |
| | 03/05/98 | <0.5 | <0.5 | <0.5 | <0.5 | NA | <50 | <50 | <300 |

Table A-5-4
Results of TPH, BTX, and MTBE Analyses
Building 637 Area
Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE | TPH as Gasoline (Carbon Range C7-C12) | TPH as Diesel (Carbon Range C12-C24) | TPH as Fuel Oil ² (Carbon Range C24-C36) |
|--------------------------------------|---|---|---|---|---|--------------------------------|---|--|---|
| Analytical Method ¹ | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021B/ SW8021M | SW8015B/ SW8015M | SW8015B/ SW8015M | SW8015B/ SW8015M |
| | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) |
| Cleanup Level | 650 | 2,100 | 1,000 | 232,000 | — | — | 13,900 | 15,000 | 21,000 |
| 637-34 (A1 Zone) | 03/11/03 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 12/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 09/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 06/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 03/05/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 11/27/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 08/28/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| DUP0828013B | 08/28/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 05/17/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 06/23/00 | < 0.5 | < 0.5 | < 0.5 | < 1 | NA | < 50 | NA | NA |
| | 03/11/03 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| 637-35 (A1 Zone) | 12/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 09/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 06/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 03/05/02 | < 0.5 | < 0.5 | < 0.5 | 0.63 | < 2 | < 50 | NA | NA |
| | 11/27/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 08/28/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 05/17/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 06/23/00 | < 0.5 | < 0.5 | < 0.5 | < 1 | NA | < 50 | NA | NA |

Table A-5-4
 Results of TPH, BTEX, and MTBE Analyses
 Building 637 Area
 Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE | TPH as Gasoline (Carbon Range C7-C12) | TPH as Diesel (Carbon Range C12-C24) | TPH as Fuel Oil (Carbon Range C24-C36) |
|--------------------------------------|----------------|---|---|---|---|---|---|--|--|
| | | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8015B/ SW8015M | SW8015B/ SW8015M | SW8015B/ SW8015M |
| Cleanup Level | 650 | 2,100 | 1,000 | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) |
| 637-36 (A1 Zone) | 06/04/03 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | 15,000 | 21,000 |
| | 03/11/03 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 12/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 09/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 06/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 03/05/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 11/27/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 08/29/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 05/17/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| 637-37 (A1 Zone) | 3/11/03 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 12/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 09/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 06/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 03/05/02 | NS | NS | NS | NS | NS | NS | NS | NS |
| | 11/27/01 | NS | NS | NS | NS | NS | NS | NS | NS |
| | 08/28/01 | NS | NS | NS | NS | NS | NS | NS | NS |
| | 05/17/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | NA | NA |
| | 06/23/00 | < 0.5 | 0.17 (J28) | < 0.5 | < 1 | NA | < 50 | NA | NA |
| 637-38 (A1 Zone) | 03/11/03 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | < 300 |
| | 03/11/03 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2.5 | < 50 | < 50 UJ | NA |
| DUP1209022B | 12/09/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | < 300 |
| | 12/09/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | < 300 |
| | | | | | | 55 | < 50 | < 50 | < 250 |

Table A-5-4
Results of TPH, BTTEX, and MTBE Analyses
Building 637 Area
Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE | TPH as Gasoline (Carbon Range C7-C12) | TPH as Diesel (Carbon Range C12-C24) | TPH as Fuel Oil ² (Cnrrhon Range C24-C36) |
|--------------------------------------|---|---|---|---|---|---------------------|---|--|--|
| Analytical Method ¹ | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8015B/ SW8015M | SW8015B/ SW8015M | SW8015B/ SW8015M | SW8015B/ SW8015M |
| Cleanup Level | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) |
| 637-38 (A1 Zone) | 08/29/02 | < 0.5 | 4.8 C | < 0.5 | 1.2 | < 2 | 280 | < 50 | NA |
| DUP052902A | 05/29/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | < 300 |
| 637-38CL | 05/29/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | 55 | < 50 | NA |
| 03/05/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 5 | 65 g | < 50 WJ | NA |
| 12/03/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | NA |
| 08/28/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | NA |
| 05/15/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | 3.7 | 190 | < 50 |
| 06/23/00 | < 0.5 | < 2 | < 0.5 | < 0.5 | 0.68 (28) | NA | 54 | < 50 | < 300 |
| 03/12/03 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | NA |
| 12/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | NA |
| 08/29/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | < 300 |
| 05/29/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | NA |
| 03/05/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | 4.5 | < 50 | < 50 | < 300 |
| 12/03/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | NA |
| 08/28/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | NA |
| 637-39R (A1 Zone) | 03/11/03 | < 0.5 | < 0.5 | < 0.5 | 0.68 (28) | NA | 320 | NA | NA |
| 12/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | NA |
| 08/29/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | NA |
| 05/29/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | < 300 |
| 03/05/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | 4.5 | < 50 | < 50 | NA |
| 12/03/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | NA |
| 08/28/01 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | NA |
| 637-40 (A2 Zone) | 03/11/03 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | NA | NA |
| 12/03/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | NA |
| 08/29/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | NA |
| 05/29/02 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 2 | < 50 | < 50 | NA |
| 03/05/02 | 0.88 | 0.97 | 1.2 | 5.6 | 12 | 85 | NA | NA | NA |

Table A-5-4
Results of TPH, BT_{EX}, and MTBE Analyses
Building 637 Area
Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE | TPH as Gasoline (Carbon Range C7-C12) | TPH as Diesel (Carbon Range ,C12-C24) | TPH as Fuel Oil ² (Carbon Range ·C24-C36) | |
|--------------------------------------|----------------|---------|---------|--------------|------------------|------|---|---|--|---------------------|
| | | | | | | | | | SW8020/ SW8021/ SW8021B/ SW8260M | SW8015B/ SW8015M |
| Analytical Method ¹ | | | | | | | | | | |
| Cleanup Level | 650 | 2,100 | 1,000 | 232,000 | — | — | 13,000 | 15,000 | | 21,000 |
| 637-40 (A2 Zone) | 12/03/01 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | NA | NA | NA |
| 637-40CL | 05/15/01 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | NA | NA | NA |
| LF07GW11 (A1 Zone) | 12/03/02 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | <50 | <300 | |
| DUP0903021A | 09/03/02 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | <50 | NA | |
| LF07GW11CL | 09/03/02 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | <50 | NA | |
| | 06/03/02 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | <50 | NA | |
| | 03/05/02 | <0.5 | 0.52 | <0.5 | 0.73 | <2 | <50 | <50 | <300 | |
| | 11/27/01 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | NA | |
| | 08/28/01 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | <50 | NA | |
| | 05/17/01 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | <50 | <50 | <300 | |
| LF07GW11CL | 05/17/01 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | <50 | <50 | NA | |
| | 02/09/00 | 2.6 | 0.7 | <0.5 | <0.5 | <0.5 | <50 | <50 | <300 | |
| | 07/07/00 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | 240 | NA | NA | |
| | 04/29/99 | <0.5 | <0.5 | <0.5 | <0.5 | NA | <50 | NA | NA | |
| | 02/01/99 | <0.5 | <0.5 | <0.5 | <0.5 | NA | 66 | 90 | <300 | |
| | 10/29/98 | <0.5 | <0.5 | <0.5 | <0.5 | NA | 110 | <50 | <300 | |
| | 07/30/98 | <0.5 | <0.5 | <0.5 | <0.5 | NA | 67 | <50 | <300 | |
| | 05/11/98 | 0.49 | <0.5 | <0.5 | <0.5 | NA | 120 | <50 | <300 | |
| | 02/10/98 | 0.34 | <0.5 | <0.5 | <0.5 | NA | 300 | <50 | <300 | |
| | | | | | | | 350 | <50 | <300 | |

Table A-5-4
Results of TPH, BTEX, and MTBE Analyses
Building 637 Area
Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE | TPH as Gasoline (Carbon Range C7-C12) | TPH as Diesel (Carbon Range C12-C24) | TPH as Fuel Oil ² (Carbon Range C24-C36) |
|--------------------------------------|------------------|---|---|---|---|---|---|--|---|
| | | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8020/ SW8021/ SW8021B/ SW8260M | SW8015B/ SW8015M | SW8015B/ SW8015M | SW8015B/ SW8015M |
| | | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) |
| | Cleanup Level | 650 | 2,100 | 1,000 | 232,000 | — | 13,000 | 15,000 | 21,000 |
| LF07GW11 (A1 Zone) | 10/14/97 | < 0.5 | < 0.5 | 0.73 | NA | 280 | 74 | < 300 | < 300 |
| | 07/17/97 | 0.29 | < 0.5 | 1.8 | NA | 400 | 83 | < 300 | < 300 |
| | 04/10/97 | < 0.5 | < 0.5 | < 0.5 | NA | 82 | < 50 | < 300 | < 300 |
| | 01/23/97 | 0.51 | < 0.5 | 0.83 | NA | < 50 | < 50 | < 300 | < 300 |
| | 10/17/96 | 0.28 | 0.54 | < 0.5 | NA | 150 | < 50 | < 300 | < 300 |
| | 07/24/96 | < 0.5 | < 0.5 | < 0.5 | NA | 73 | < 50 | < 300 | < 300 |
| | 05/08/96 | < 0.5 | < 0.5 | < 0.5 | NA | 100 | < 50 | < 300 | < 300 |
| | 02/22/96 | 3.6 | 0.91 | < 0.5 | 1.3 | NA | 360 | < 50 | < 300 |
| | 11/16/95 | 2.4 | 1.4 | < 0.5 | 2 | NA | 450 | < 50 | < 300 |

Notes

1 - The identified analytical method(s) are for analyses performed beginning in the Second Quarter 2001. The analytical methods used during previous quarters are identified in the preceding sections.

2 - TPH as fuel oil uses a motor oil standard for carbon range (C24-C36).
respective quarterly reports.

$\mu\text{g/L}$ - micrograms per liter

NA - not available for the Aug
NS - not sampled

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MIBE - methyl tertiary butyl ether
TPH - total petroleum hydrocarbon

"CL" suffix denotes a Qualifier.

Table 7 in the main report identifies all duplicates and split samples and associates them with

Table 1. In the main report, we present an empirical analysis and associate much with the well from which they were collected.

Table II Main report outcomes current and historic classifiers.

Bold numbers indicate concentrations = Clean-up level not established

Сибирь, Азия и Европа:

Table A-5-5
 Results of VOC Analyses
 Building 637 Annex
 Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Volatile Organic Compounds (VOCs) | | | | | | | | | |
|--------------------------------------|----------------|-----------------------------------|--------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | | 1,2-DCA | cis-1,2-DCE (cis- & trans-) | 1,2-DCE (cis-) | Acetone | Carbon Disulfide | Chloroform | Chloromethane | PCE | Vinyl Chloride | All Other VOCs |
| | | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M |
| Analytical Method ¹ | Unit | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) |
| Cleanup Level | 0.5 | 6 | — | — | — | — | — | — | — | 0.5 | — |
| 637-01R (A2 zone) | 05/06/99 | <0.5 | <0.5 | NA | NA | <5 | NA | <0.5 | <0.5 | <0.5 | ND |
| | 02/04/99 | <0.5 | <0.5 | NA | NA | <5 | NA | <0.5 | <0.5 | <0.5 | ND |
| | 11/04/98 | <0.5 | <0.5 | NA | NA | <5 | NA | <0.5 | <0.5 | <0.5 | ND |
| | 08/03/98 | <0.5 (U18) | <0.5 (U18) | NA | NA | <5 (U18) | <0.5 (U18) | <0.5 (U18) | <0.5 (U18) | <0.5 (U18) | ND |
| | 05/07/98 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND |
| | 02/09/98 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND |
| | 10/13/97 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND |
| | 07/17/97 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND |
| | 04/09/97 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND |
| | 01/23/97 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND |
| | 10/23/96 | <0.5 | <0.5 | NA | <10 | <5 | 0.81 | <0.5 | <0.5 | <0.5 | ND |
| | 07/29/96 | <0.5 | NA | <0.5 | <10 | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND |
| | 05/15/96 | 0.63 | NA | <0.5 | <10 | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND |
| | 02/29/96 | <0.5 | NA | <0.5 | <10 | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND |
| | 12/08/95 | <0.5 | NA | <0.5 | <10 | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND |
| | 08/28/95 | <50 | NA | <50 | <1000 | <500 | <50 | <50 | <50 | <50 | ND |
| | 05/19/95 | <100 | NA | <100 | <200 | <100 | <100 | <100 | <100 | <100 | ND |
| | 02/23/95 | <50 | NA | <50 | <100 | <50 | <50 | <100 | <100 | <100 | ND |
| | 12/07/94 | <5 | NA | <5 | <10 | <5 | <5 | <10 | <5 | <10 | ND |
| | 08/30/94 | <25 | NA | <25 | <50 | <25 | <25 | <50 R | <25 | <50 | ND |
| | 05/24/94 | <50 | NA | <50 | 130 | <50 | <50 | <100 | <50 | <100 | ND |
| | 02/11/94 | <5 | NA | <5 | <10 | <5 | <5 | <10 | <5 | <10 | ND |

Table A-5-5
Results of VOC Analyses
Building 637 Area
Presidio of San Francisco, California

| Well Name (water-bearing zone) | Sample Date | Volatile Organic Compounds (VOCs) | | | | | | | | | |
|--------------------------------------|---------------------|-----------------------------------|--------------------------------|----------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| | | 1,2-DCA | cis-1,2-DCE (cis- & trans-) | 1,2-DCE (cis- & trans-) | Acetone | Carbon Disulfide | Chloroform | Chloromethane | PCE | Vinyl Chloride | All Other VOCs |
| Analytical Method ¹ | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M |
| Unit | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) |
| Cleanup Level | 0.5 | 6 | — | — | — | — | — | — | — | 0.5 | — |
| (A2 zone) | 637-19 05/03/99 | < 0.5 | < 0.5 | NA | NA | < 5 | < 1 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| | 02/01/99 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 10/29/98 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 07/30/98 | < 0.5 (U18) | < 0.5 (U18) | NA | NA | < 5 (U18) | < 0.5 (U18) | < 0.5 (U18) | < 0.5 (U18) | < 0.5 (U18) | ND |
| | 05/11/98 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 02/05/98 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 10/09/97 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 07/15/97 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 04/08/97 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 01/22/97 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 10/22/96 | < 0.5 | < 0.5 | NA | < 10 | < 5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 07/26/96 | < 0.5 | < 0.5 | NA | < 10 | 11 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 05/14/96 | < 0.5 | < 0.5 | NA | < 10 | < 5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 02/27/96 | < 0.5 | < 0.5 | NA | < 10 | < 5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 12/07/95 | < 0.5 | < 0.5 | NA | < 10 | < 5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 08/25/95 | < 0.5 | < 0.5 | NA | < 10 | < 5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 05/18/95 | < 5 | < 5 | NA | < 10 | < 5 | < 5 | < 10 | < 5 | < 10 | ND |
| | 02/22/95 | < 5 | < 5 | NA | < 10 | < 5 | < 5 | < 10 | < 5 | < 10 | ND |
| | 11/30/94 | < 5 | < 5 | NA | < 10 | < 5 | < 5 | < 10 | < 5 | < 10 | ND |
| | 08/29/94 | < 5 | < 5 | NA | < 10 | < 5 | < 5 | < 10 | < 5 | < 10 | ND |
| | 05/19/94 | < 5 | < 5 | NA | < 10 | < 5 | < 5 | < 10 | < 5 | < 10 | ND |
| | 02/15/94 | < 5 | < 5 | NA | < 10 | < 5 | < 5 | < 10 | < 5 | < 10 | ND |

Table A-5-5
 Results of VOC Analyses
 Building 637 Area
 Presidio of San Francisco, California

| Well Name (water-bearing zone) | | Volatile Organic Compounds (VOCs) | | | | | | | | | | |
|--------------------------------------|----------------|-----------------------------------|--------------------------------|----------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--|
| | Sample Date | 1,2-DCA | cis-1,2-DCE (cis- & trans-) | 1,2-DCE (cis- & trans-) | Acetone | Carbon Disulfide | Chloroform | Chloromethane | PCE | Vinyl Chloride | All Other VOCs | |
| Analytical Method ¹ | Unit | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | |
| 637-26 (A1 Zone) | Cleanup Level | 0.5 | 6 | — | — | — | — | — | — | 0.5 | — | |
| 04/28/99 | <0.5 | <0.5 | NA | NA | <5 | <1 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 01/28/99 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 10/28/98 | <2.5 | <2.5 | NA | NA | <25 | <2.5 | <2.5 | <2.5 | <2.5 | <2.5 | ND | |
| 07/29/98 | <0.5 (U18) | <0.5 (U18) | NA | NA | <5 (U18) | <0.5 (U18) | 0.59 (J18) | <0.5 (U18) | <0.5 (U18) | <0.5 (U18) | ND | |
| 05/06/98 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 02/10/98 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 10/14/97 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 07/17/97 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 04/10/97 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 01/24/97 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 10/24/96 | <6.2 | <6.2 | NA | <120 | <62 | <6.2 | <6.2 | <6.2 | <6.2 | <6.2 | ND | |
| 07/30/96 | <0.5 | NA | <0.5 | <10 | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 05/16/96 | <2.5 | NA | <2.5 | <50 | <25 | <2.5 | <2.5 | <2.5 | <2.5 | <2.5 | ND | |
| 03/01/96 | <5 | NA | <5 | <100 | <50 | <5 | <5 | <5 | <5 | <5 | ND | |
| 12/08/95 | <2.5 | NA | <2.5 | <50 | <25 | <2.5 | <2.5 | <2.5 | <2.5 | <2.5 | ND | |
| 637-27 (A1 Zone) | 05/03/99 | <0.5 | <0.5 | NA | NA | <5 | <1 | <0.5 | <0.5 | <0.5 | ND | |
| 02/01/99 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 10/29/98 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 07/30/98 | <0.5 (U18) | <0.5 (U18) | NA | NA | <5 (U18) | <0.5 (U18) | 0.54 (J18) | <0.5 (U18) | <0.5 (U18) | <0.5 (U18) | ND | |
| 05/11/98 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 02/05/98 | <0.5 | <0.5 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 10/09/97 | <0.5 | 13 | NA | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | 4.5 | ND | |

Table A-5-5
Results of VOC Analyses
Building 637 Area
Presidio of San Francisco, California

| Volatile Organic Compounds (VOCs) | | | | | | | | | | |
|-----------------------------------|-------------|--------------------------------|---------------------|----------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------|
| Well Name (water-bearing zone) | Sample Date | Analytical Method ¹ | | | | | | | | |
| | | 1,2-DCA | cis-1,2-DCE | 1,2-DCE (cis- & trans-) | Acetone | Carbon Disulfide | Chloroform | Chloromethane | PCE | Vinyl Chloride |
| | | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | All Other VOCs |
| 637-27 (A1 Zone) | 07/15/97 | < 0.5 | 10 (IS) | NA | NA | < 5 | < 0.5 | < 0.5 | 2.4 (IS) | ND |
| | 04/08/97 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 01/22/97 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 10/23/96 | < 2.5 | < 2.5 | NA | < 50 | < 25 | < 2.5 | < 2.5 | < 2.5 | ND |
| | 07/29/96 | < 0.5 | NA | < 0.5 | < 10 | < 5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 05/15/96 | < 2.5 | NA | < 2.5 | < 50 | < 25 | < 2.5 | < 2.5 | < 2.5 | ND |
| | 02/29/96 | < 0.5 | NA | < 0.5 | < 10 | < 5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 12/08/95 | < 0.5 | NA | < 0.5 | < 10 | < 5 | < 0.5 | < 0.5 | < 0.5 | ND |
| 637-33 (A2 Zone) | 05/04/99 | < 0.5 | < 0.5 | NA | NA | < 5 | < 1 | < 0.5 | < 0.5 | ND |
| | 02/02/99 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 11/02/98 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 08/03/98 | < 0.5 | (U18) | < 0.5 (U18) | NA | < 5 (U18) | < 0.5 (U18) | < 0.5 (U18) | < 0.5 (U18) | ND |
| | 05/07/98 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 03/05/98 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | ND |
| 637-40 (A2 Zone) | 03/11/03 | < 0.5 | < 0.5 | NA | < 10 | < 0.5 | < 1 | < 0.5 | < 0.5 | ND |
| | 03/05/02 | < 0.5 | 0.6 | NA | 20 J- | < 0.5 | < 0.5 | < 1 | 1.7 | < 0.5 |
| | 05/15/01 | < 0.5 | 0.9 | NA | < 10 | 1 | < 0.5 | < 1 | < 0.5 | ND |
| | 05/15/01 | < 1 | < 1 | NA | < 50 | < 5 | < 1 | < 1 | < 1 | ND |
| 637-40CL | 07/07/00 | < 0.5 | < 0.5 | < 0.5 | NA | < 5 | < 1 | < 0.5 | < 0.5 | ND |
| LF07GW1 (A1 Zone) | 04/29/99 | < 0.5 | < 0.5 | < 0.5 | NA | < 5 | < 1 | < 0.5 | < 0.5 | ND |
| | 02/01/99 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | ND |
| | 10/29/98 | < 0.5 | < 0.5 | NA | NA | < 5 | < 0.5 | < 0.5 | < 0.5 | ND |

Table A-5-5
 Results of VOC Analyses
 Building 637 Area
 Presidio of San Francisco, California

| Volatile Organic Compounds (VOCs) | | | | | | | | | | | |
|--------------------------------------|-----------------------------------|---------------------|--------------------------------|----------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-------------------|
| Well Name (water-bearing zone) | Sample Date | 1,2-DCA | cis-1,2-DCE (cis- & trans-) | 1,2-DCE (cis- & trans-) | Acetone | Carbon Disulfide | Chloroform | Chloromethane | PCE | Vinyl Chloride | All Other VOCs |
| | Analytical Method ¹ | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | SW8260B/ SW8260M | |
| | Unit | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | ($\mu\text{g/L}$) | |
| LF07GW11 (A1 Zone) | Cleanup Level | 0.5 | 6 | — | — | — | — | — | — | 0.5 | |
| 07/30/98 | <0.5 | <0.5 | <0.5 | NA | <5 | <0.5 | 0.87 | <0.5 | <0.5 | — | |
| 05/11/98 | <0.5 | <0.5 | <0.5 | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 02/10/98 | <0.5 | <0.5 | <0.5 | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 10/14/97 | <0.5 | <0.5 | <0.5 | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 07/17/97 | <0.5 | <0.5 | <0.5 | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 04/10/97 | <0.5 | <0.5 | <0.5 | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 01/23/97 | <0.5 | <0.5 | <0.5 | NA | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 10/17/96 | <0.5 | <0.5 | <0.5 | NA | <10 | <5 | <0.5 | <0.5 | <0.5 | ND | |
| 07/24/96 | <0.5 | NA | <0.5 | <10 | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 05/08/96 | <0.5 | NA | <0.5 | <10 | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 02/22/96 | <0.5 | NA | <0.5 | <10 | <5 | <0.5 | <0.5 | <0.5 | <0.5 | ND | |
| 11/16/95 | 0.62 | NA | <0.5 | <10 | <5 | 0.8 | <0.5 | <0.5 | <0.5 | ND | |

Notes

1 - The identified analytical method(s) are for analyses performed beginning in the Second Quarter 2001. The analytical methods used during previous quarters are identified in the respective quarterly reports.

$\mu\text{g/L}$ - micrograms per liter

ND - not detected

VOC - volatile organic compound

MTBE - methyl tertiary butyl ether

PCE - Tetrachloroethene

1,2-DCA - 1,2-dichloroethene

Cis-1,2-DCE - Cis-1,2-dichloroethene

(Cis- & trans-)1,2-DCE - total cis & trans 1,2-dichloroethene

(In&P)Xylenes - meta and para xylenes (sum)

Total Xylenes - meta, para, and ortho xylenes (sum)
 "CL" suffix denotes a quality control duplicate sample was sent to the control laboratory.

Table 7 in the main report identifies all duplicate and split samples and associates them with the well from which they were collected.
 Table 11 in the main report identifies current and historic data qualifiers.

Bold numbers indicate concentrations which exceed cleanup levels.
 -- Cleanup level not established.

Table J-1
Baseline Sampling
Building 637 Area Monitoring Wells

| | Well 637-38 | | Well 637-26 | | Well LF07GW11 | |
|------------------|---------------------|----------|---------------------|----------|---------------------|----------|
| Date of Sampling | 4/1/99 ¹ | 2/9/00 | 4/1/99 ¹ | 2/9/00 | 4/1/99 ¹ | 2/9/00 |
| Sampling Method | conventional | low-flow | conventional | low flow | conventional | low flow |
| TPH-gasoline | new well | 250 ug/l | 510 ug/l | 160 ug/l | 66 ug/l | 240 ug/l |
| MTBE | na | 6.1 | na | <0.50 | na | <0.50 |
| Benzene | na | < 0.50 | <0.50 | <0.50 | <0.50 | 2.6 |
| Toluene | na | 1.5 | <0.50 | 1.3 | <0.50 | 0.7 |
| Ethylbenzene | na | 0.52 | <0.50 | <0.50 | <0.50 | <0.50 |
| m,p Xylenes | na | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| O Xylenes | na | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |

Notes

- 1) April 1999 results reported in *Building 637 Area January 1999 - October 1999 Monitoring Reports*, Volume 2, prepared by Montgomery Watson.
- 2) na - not applicable

LOW-FLOW GROUNDWATER SAMPLE FIELD DATA SHEET

PROJECT NO: SP Presidio
PURGED BY: S. G. Acarman
SAMPLED BY: S. G. Acarman, VI

SAMPLE ID : LF076LW11
CLIENT NAME : Presidio Trust
LOCATION : San Francisco

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CASING DIAMETER (inches): 2 _____ 3 _____ 4 _____ 4.5 _____ 6 _____ Other _____

OTHER: COLOR (Cobalt, 0-100): ODOR: none

FIELD SAMPLES COLLECTED AT THIS WELL (i.e.FB-1, XDUP-1):

PURGING/SAMPLING EQUIPMENT: Bladder Pump Electric Submersible Pump Peristaltic pump

WELL INTEGRITY: (Good) LOCK: Side 8244

REMARKS: Dissolved oxygen collected downhole 2/11/00

DO = 0.72 mg/l TEMP = 14.5° C

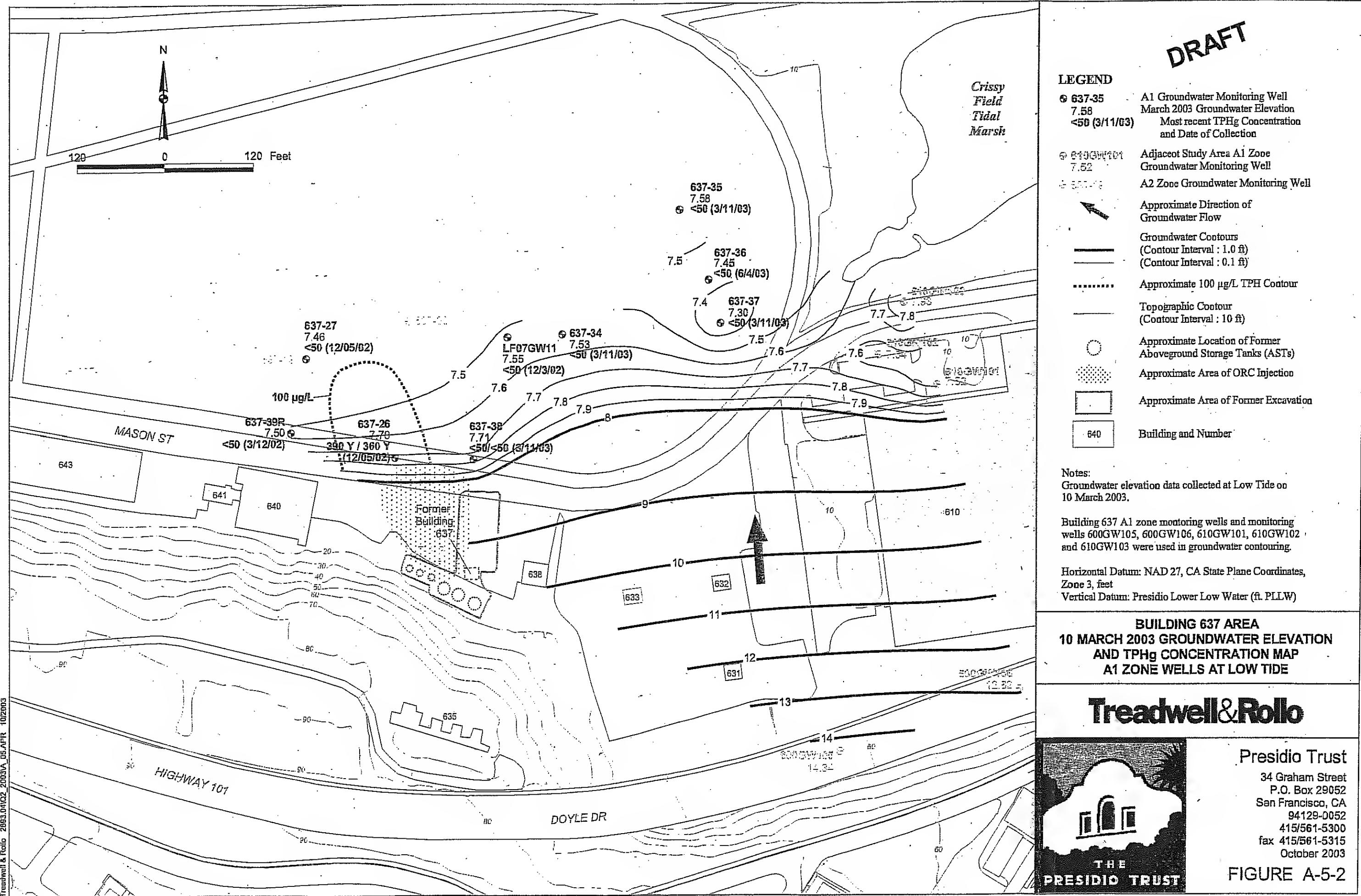
Digitized by srujanika@gmail.com

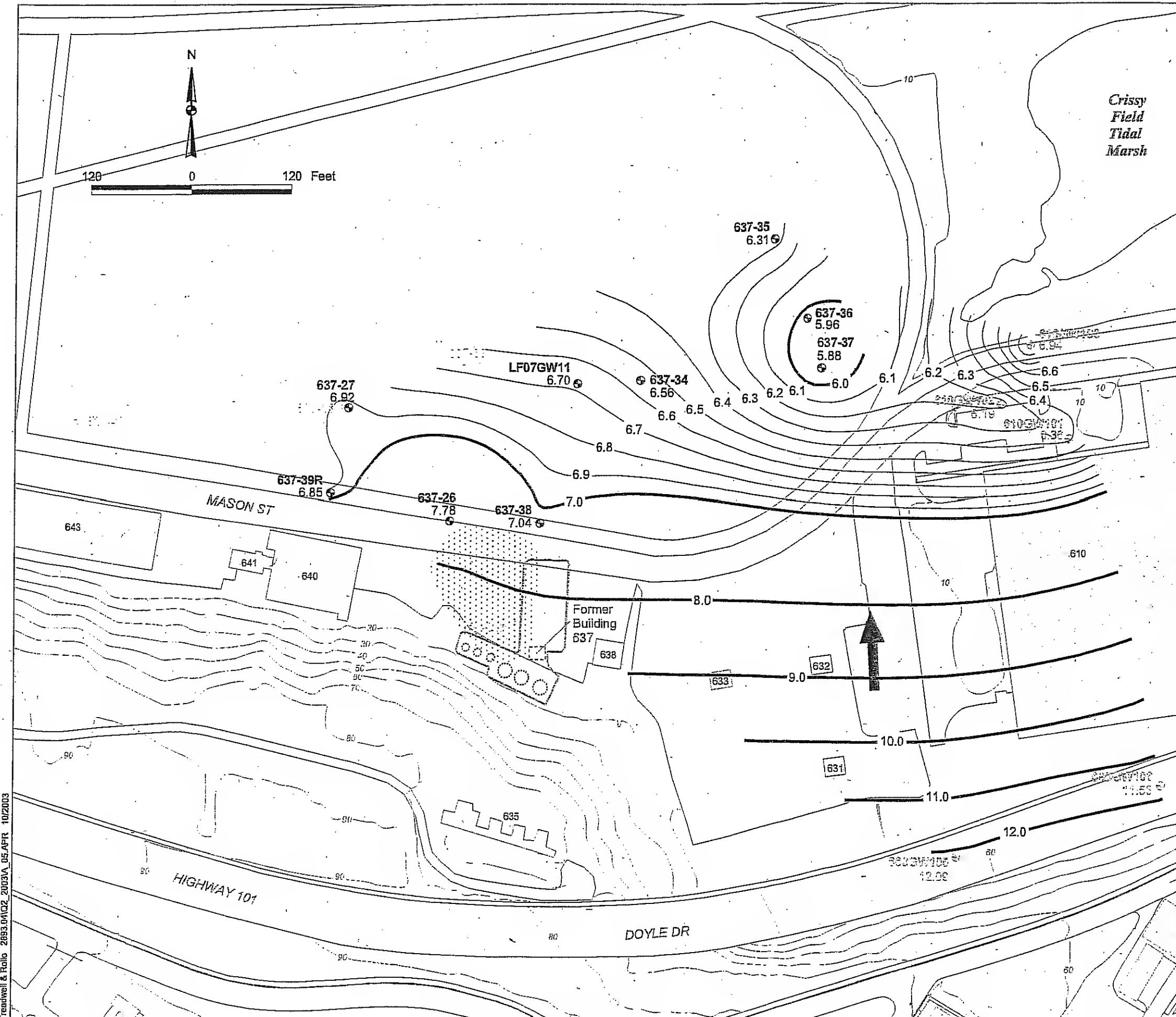
FIELD METER MODEL NUMBER(S): Sec 63 - 38 CALIBRATION DATE(S): _____

pH: 4 7 10 EC: 1000 O.R.P.: Turbidity: /

D.O.: _____

SIGNATURE: SL REVIEWED BY: _____ PAGE _____ OF _____





DRAFT

LEGEND

- 637-35
6.31 A1 Groundwater Monitoring Well
June 2003 Groundwater Elevation
- 2110SW104
8.36 Adjacent Study Area A1 Zone
Groundwater Monitoring Well
- 2110SW105 A2 Zone Groundwater Monitoring Well
-  Approximate Direction of
Groundwater Flow
- 

 Groundwater Contours
(Contour Interval : 1.0 ft)
(Contour Interval : 0.1 ft)
-  Topographic Contour
(Contour Interval : 10 ft)
-  Approximate Location of Former
Aboveground Storage Tanks (ASTs)
-  Approximate Area of ORC Injection
-  Approximate Area of Former Excavation
- 640 Building and Number

Notes:
Groundwater elevation data collected at Low Tide on
2 June 2003.

Building 637 A1 zone monitoring wells and monitoring wells 600GW105, 600GW106, 610GW101, 610GW102 and 610GW103 were used in groundwater contouring.

Horizontal Datum: NAD 27, CA State Plane Coordinates,
Zone 3, feet

**BUILDING 637 AREA
2 JUNE 2003
GROUNDWATER ELEVATION MAP
A1 ZONE WELLS AT LOW TIDE**

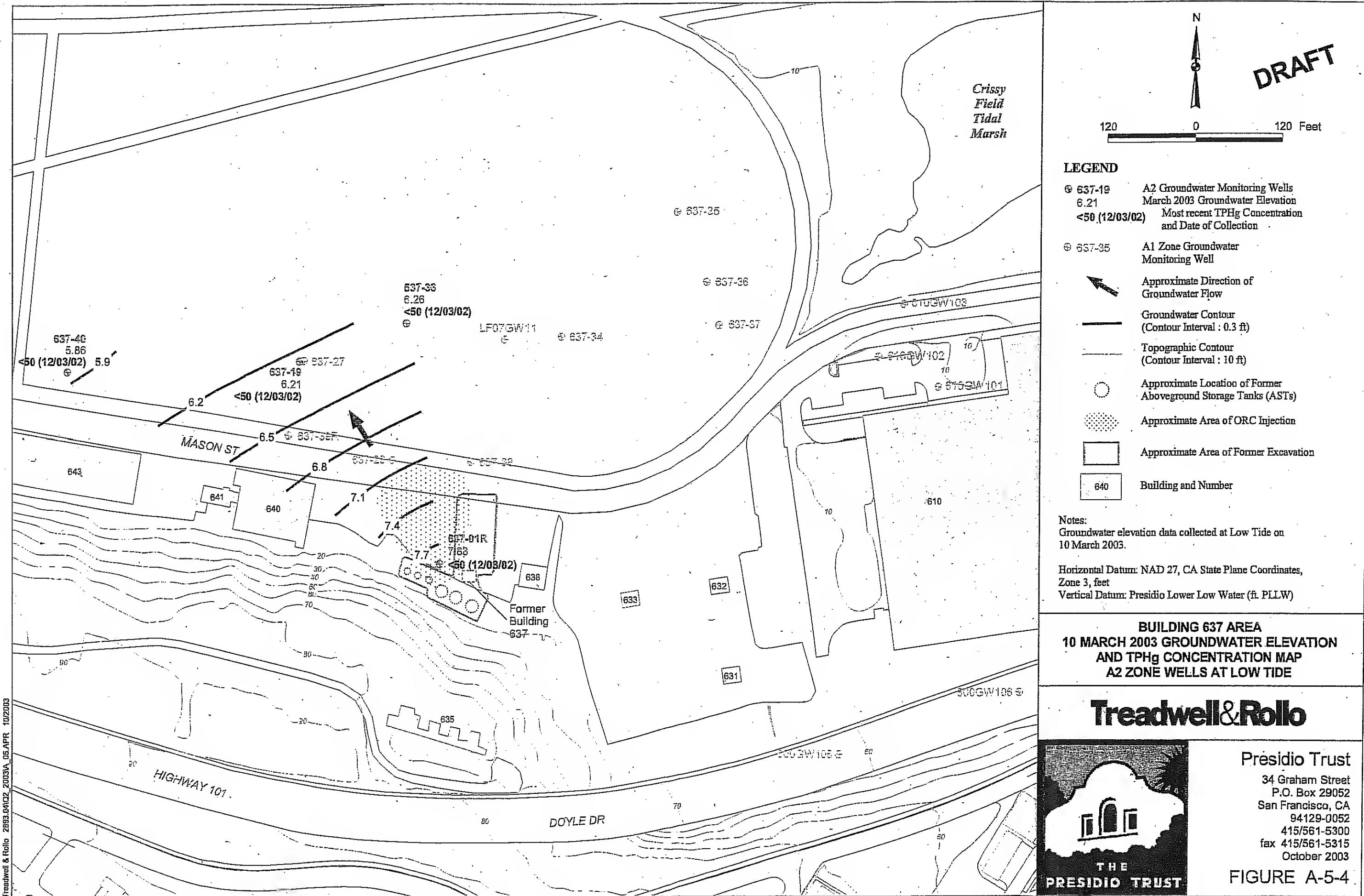
Treadwell & Rollo

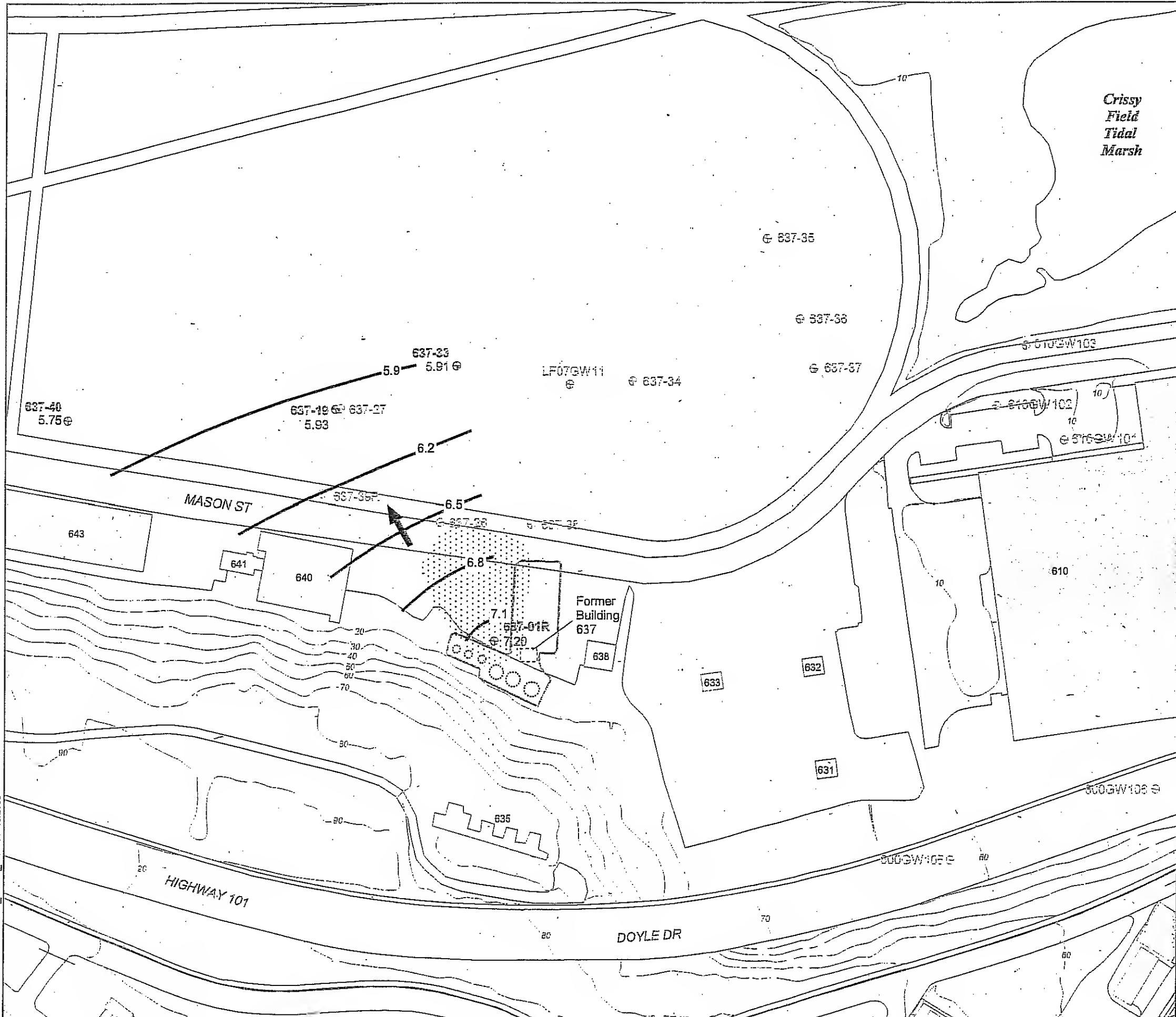


Presidio Trust

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fax 415/561-5315
October 2003

FIGURE A-5-3





Notes:
Groundwater elevation data collected at Low Tide on
2 June 2003.

Horizontal Datum: NAD 27, CA State Plane Coordinates,
Zone 3, feet
Vertical Datum: Presidio Lower Low Water (ft. PLLW)

**BUILDING 637 AREA
2 JUNE 2003
GROUNDWATER ELEVATION MAP
A2 ZONE WELLS AT LOW TIDE**

Treadwell & Roll



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October 2003.

FIGURE A-5-5

